

OPERATION AND MAINTENANCE

OUTPUT STATUS CONSOLE
BERMUDA AND GODDARD

FACILITY FORM 601

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CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF MANUAL

This manual provides operating and maintenance personnel with information on the theory, operation, installation, maintenance, and parts replacement for the Output Status Consoles (fig. 1-1) used in the "Mercury Launch Monitor Subsystem". One console is located at the Goddard Space Flight Center and the other is at the Bermuda Space Flight Center.

1.2 SCOPE OF MANUAL

This manual describes the consoles and explains the theory of operation, operation, maintenance, and installation of these consoles. An Illustrated Parts Breakdown (Ch 6) is provided to allow the procurement of replacement parts. Detailed information on the data monitored by these consoles is not included herein because such information is covered in other publications for the system.

1.3 PURPOSE OF EQUIPMENT

The Goddard Output Status Console is used as a monitor and switching control unit for real-time data which is processed simultaneously by two IBM 7090 Computers. Controls and indicators are provided on the front panel of the console to accomplish the monitoring and switching functions.

The Bermuda Output Status Console is used to monitor real-time data which is processed by an IBM 709 Computer. The Bermuda console is used to monitor only and has no switching control function. Indicators which perform the monitoring function are provided on the front panel of the console.

1.4 DESCRIPTION

1.4.1 Physical

Both the Goddard and Bermuda Output Status Consoles are mounted on single-pedestal desks approximately 45 inches wide, 29-3/4 inches high, and 30 inches deep. Each console weighs approximately 150 pounds. The control panels for the consoles are mounted on the rear center portion of the desk. All of the controls and indicators are mounted on the control panel.

Access to the interior of the consoles is provided by a removable rear panel. The front panel may be tilted forward by loosening three camlock fasteners along the interior top edge of the front panel.

1.4.2 Electrical

Input power to both the Goddard and the Bermuda consoles is $115 \pm 10\text{vac}$, 60-cycle ± 1 cycle. Input power is supplied to the units through cabling wired to terminal boards within the control panel. Each unit is rated at 2 amperes, 0.23 kva.

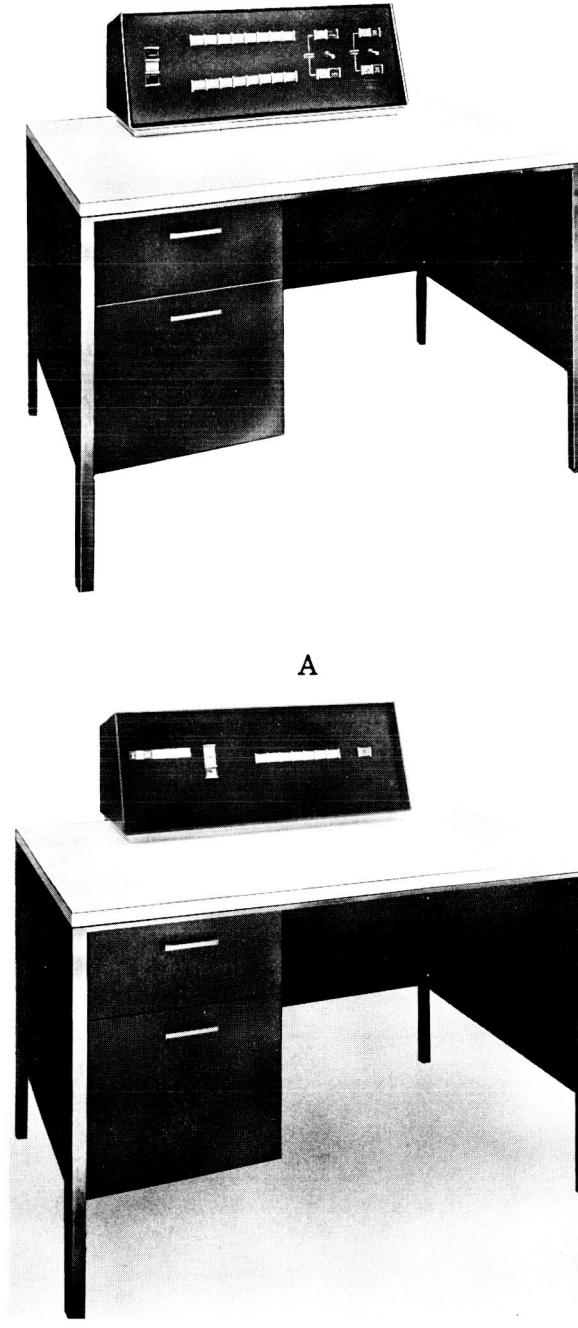


FIGURE 1-1. OUTPUT STATUS CONSOLES, OVERALL VIEW

CHAPTER 2

THEORY OF OPERATION

2.1 GENERAL

This chapter discusses the theory of operation of the Goddard and Bermuda Output Status Consoles. The discussion includes a block diagram analysis for each console and a detailed circuit analysis. The latter is divided into the following functional areas: power circuitry, test indicator circuitry, selection and confirm circuitry, indicator control circuitry, and audible alarm circuitry. The discussion of these areas applies to both consoles, with the following exceptions: a separate discussion of power circuitry is included for each console; the selection and confirm circuitry discussion applies to the Goddard console only.

2.2 BLOCK DIAGRAM ANALYSIS

2.2.1 Goddard Console

Figure 2-1 is a block diagram which shows the interconnection of the Goddard console with two IBM 7090 Computers, the Output Switch Unit, the D/A Converter, and the A and B Plot Boards. Status lines from each computer to the console are used to activate indicators on the console upon command from the computers. A separate set of indicators is provided for each computer. Monitoring these indicators and the A and B Plot Boards provides the operator with sufficient information to select either the A or B computer as the data source for the Output Switch Unit. The computer is selected by means of a selection switch on the console which activates the switching control circuitry in the Output Switch Unit. The high-speed data and the teletype data outputs of the selected computer are then sent to Cape Canaveral and to the Teletype Distributor, respectively.

The console is connected to the D/A Converter through the control and confirm indicator lines. A switch on the console is used to connect computer A to Plot Board A and computer B to Plot Board B or to connect computer A to Plot Board B and computer B to Plot Board A.

2.2.2 Bermuda Console

Figure 2-2 is a block diagram which shows the interconnection of the Bermuda Output Status Console with one IBM 709 Computer. Indicator lights on the console are activated upon command from the computer and are used to indicate the status of the computer to the operator. The only function of the Bermuda console is to provide monitoring information, and there are no provisions for the operator to exercise control, as with the Goddard console.

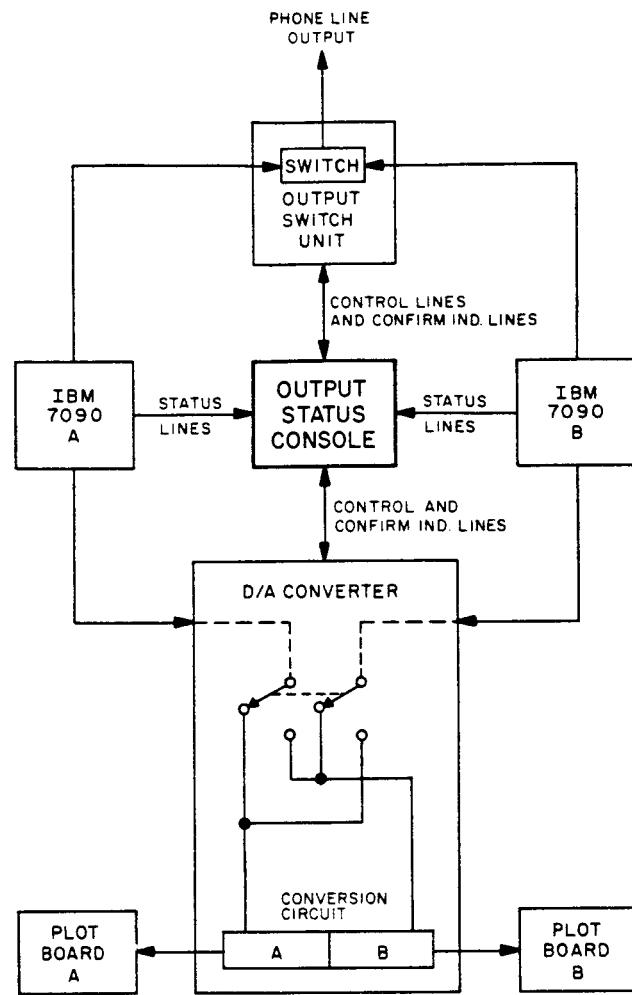


FIGURE 2-1. GODDARD CONSOLE, BLOCK DIAGRAM

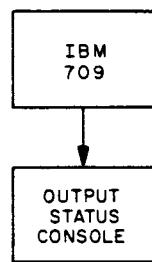


FIGURE 2-2. BERMUDA CONSOLE, BLOCK DIAGRAM

2.3 DETAILED CIRCUIT ANALYSIS

Figures 2-3 and 2-4 are schematic diagrams of the Goddard and Bermuda consoles, respectively. Refer to these figures for the following circuit discussion.

2.3.1 Power Circuitry, Goddard

The 115vac input power line to the Goddard console is connected to terminals F and E of terminal board 6TB3. The input voltage is taken from the terminal board through a 2-ampere fuse (6F1) and an interlock (6S1) to the normally open contacts of POWER ON switch 1D3. Depressing the POWER ON switch closes two sets of normally open contacts. The first set (1D3-1) applies power to the power transformer (6T1). The secondary of the transformer is connected to a full-wave rectifier (6DS1) whose output is 48vdc. The 48vdc output of the rectifier is connected through fuse 6F2, the second set of POWER ON contacts (1D3-2), and through the normally closed contacts of POWER OFF switch contacts (1D1) to the coil of relay 5B13, causing the relay to energize and the indicator lamps of POWER ON switch 1D3 to light. Contacts 5 and 16 and contacts 13 and 20 of relay 5B13 close, providing hold paths across the 1D3-1 and 1D3-2 contacts of the POWER ON switch, respectively. Thus, power will still be applied to the unit when the POWER ON switch is released. Depressing POWER OFF switch 1D1 opens its normally closed contacts, causing relay 5B13 to de-energize. Contacts 5 and 16 of relay 5B13 open, removing the a-c input to the power transformer, and contacts 13 and 20 of relay 5B13 open, removing d-c voltage from the contacts of the POWER OFF switch.

Removal of d-c voltage from the POWER OFF switch is necessary to prevent rapid discharge of capacitor 6C1 through relay 5B13, which could cause power to recycle if the pushbutton were rapidly depressed and released.

2.3.2 Power Circuitry, Bermuda

The 115vac input power to the Bermuda console is connected through a 1-ampere fuse (6F1) and interlock 6S1 to POWER ON switch 1C3. Depressing the POWER ON switch closes its normally open contacts and applies power to power transformer 6T1. The output of the transformer is applied to a full-wave rectifier network (6DS1) that produces a +48vdc output. The d-c output of the rectifier network is applied through a 1.5-ampere fuse (6F2) and the normally closed contacts of the POWER OFF switch (1C1) to the coil of relay 5B13, causing this relay to energize. The d-c voltage is also applied to the indicator lamps of the POWER ON switch. Contacts 5 and 16 of relay 5B13 close, providing a hold path for the input voltage when the POWER ON switch is released. Depressing POWER OFF switch 1C1 opens the circuit to the coil of relay 5B13 and de-energizes the relay. Holding contacts 5 and 16 of relay 5B13 open, removing the a-c input to the power transformer. Simultaneously, the normally open contacts of the POWER OFF switch, which are now closed, provide a quick discharge path through R2 for filter capacitor 6C1.

The primary of the power transformer has four voltage taps for input voltages of 103, 110, 117, or 124vac. The jumper wire attached to terminal C of terminal board 6TB3 is connected to the appropriate tap for the input voltage available.

2.3.3 Selection and Confirm Circuitry

When the COMPUTER TO OUTPUT (1S2) switch is in the select A position, the ground return circuit through contacts A2 and A3 of switch 1S2 is open and deactivates selection circuitry in the Output Switch Unit, thereby causing the A computer to become the active data source for phone line outputs. The A SELECT indicator is lit through the ground

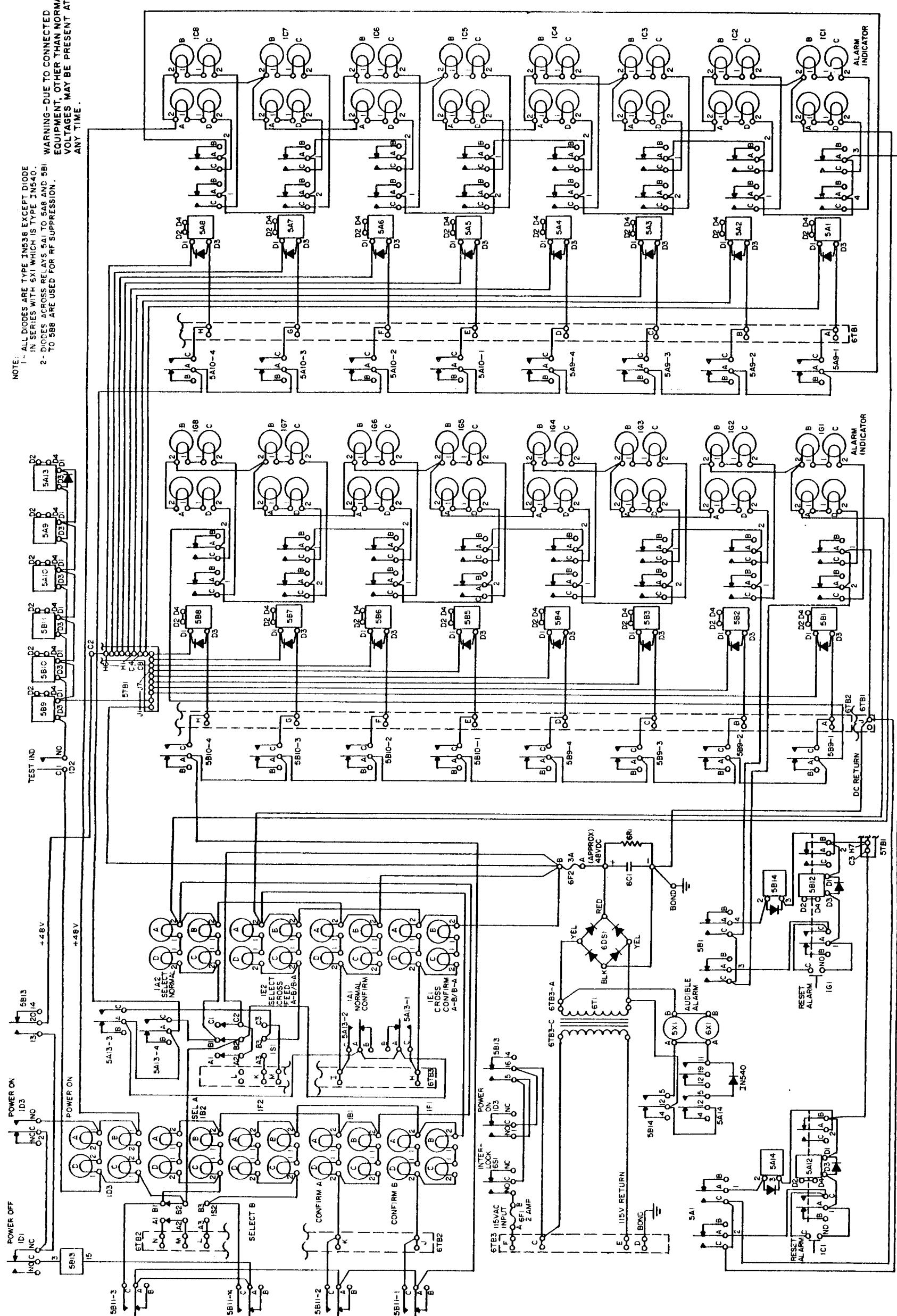


FIGURE 2-3. GODDARD CONSOLE, SCHEMATIC DIAGRAM

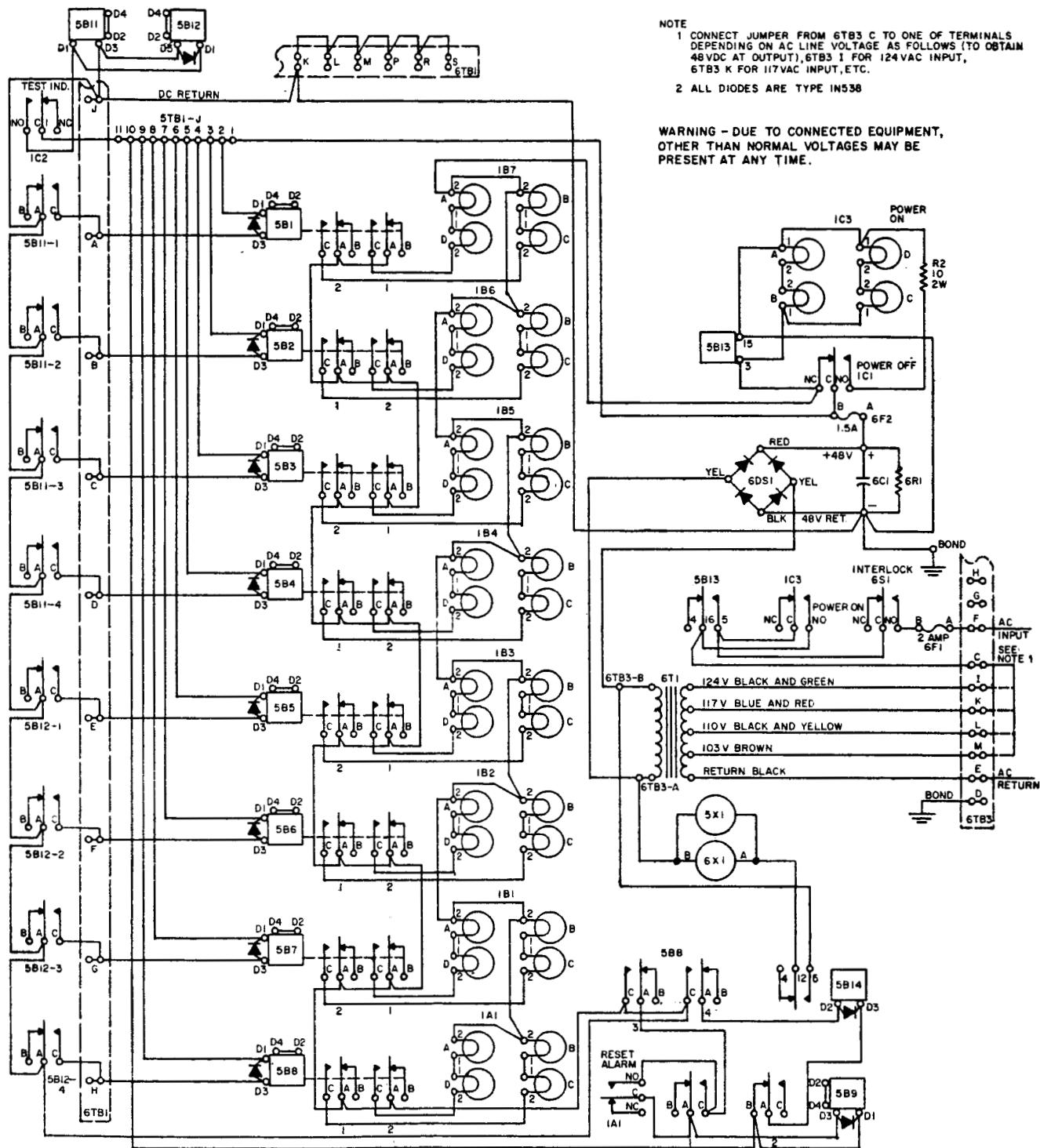


FIGURE 2-4. BERMUDA CONSOLE, SCHEMATIC DIAGRAM

return circuit which is completed by contacts B1 and B2 of switch 1S2. The A CONFIRMED indicator is lit by the closing of ground return contacts in the Output Switch Unit which are connected to terminal K of terminal board 6TB2.

When the COMPUTER TO OUTPUT switch is placed in the select B position, contacts A2 and A3 close, activating selection circuits in the Output Switch Unit which connect the B computer as the active data source for phone line outputs. The B SELECT indicator is lit through the ground return circuit which is completed by closed contacts B2 and B3 of switch 1S2. The B CONFIRMED indicator is lit by the closing of ground return contacts in the Output Switch Unit which are connected to terminal J of terminal board 6TB2.

When the COMPUTER TO D/A switch (1S1) is in the select normal position, the ground return to the selection control relay (in the D/A Converter) is open, and data from the A computer is fed to Plot Board A and data from computer B is fed to Plot Board B. The SELECT NORMAL A-A & B-B indicator is lit through the ground return which is completed by contacts B1 and B2 of switch 1S1. The CONFIRM NORMAL A-A & B-B indicator is lit by the closing of ground return contacts in the Output Switch Unit which are connected to terminal I of terminal board 6TB3.

When the COMPUTER TO D/A switch is in the cross select position, the data from the computers is cross-selected; that is, the A computer is connected to the B Plot Board and the B computer is connected to the A Plot Board. Closed contacts A2 and A3 complete the ground circuit to the selection control relays in the D/A Converter. Closed contacts B2 and B3 of switch 1S1 complete the ground return circuit for the SELECT CROSS A-B & B-A indicator. The CONFIRM CROSS A-B & B-A indicator is lit by closed contacts in the D/A Converter which are connected to terminal H of terminal board 6TB3.

2.3.4 Test Indicator Circuitry

Depressing the TEST IND switch (1D2-1, Goddard, or 1C2-1, Bermuda) completes the ground return, energizing relays 5B9, 5B10, 5B11 and 5A9, 5A10, and 5A13 on the Goddard console and 5B11 and 5B12 on the Bermuda console. When the normally open contacts of these relays are closed, the test indicator relays are selected; this completes the ground returns for the respective indicators, causing them to be lit. The select and confirm indicators are lit by the completion of the ground return through closure of contacts on relays 5B11 and 5A13.

Note

There are four lamps in each indicator which are wired in a series-parallel circuit, with two lamps in each series line. If an indicator does not appear to be uniformly lit, the lamps should be checked and replaced if necessary.

2.3.5 Indicator Control Circuitry

The Goddard console houses two groups of sense indicators, eight in each group, which monitor data from the A and B IBM 7090's. Indicators 1C1 through 1C8 are fed by inputs from the A computer, with inputs received at terminal board 6TB1, connections A to H. Inputs from computer B are similarly received at terminal board 6TB2, connections A to

H, for indicators 1G1 through 1G8. Both groups of indicators are activated by the completion of ground return circuits in the respective computers, with each indicator separately activated. The first indicator in each group (1G1 and 1C1) is connected to an audible alarm circuit, which is explained in paragraph 2.7. With the exception of the alarm indicator, these indicators are not engraved but are provided with Mylar inserts for nomenclating by any suitable marking method; e.g., India ink or typewriter. A non-permanent engraving permits the rapid change of indicator names as required. The nomenclature will be assigned by the computer programmers.

The Bermuda console has eight indicators on the front panel which monitor data from an IBM 709. These indicators receive inputs from the computer at terminal board 6TB1 and are activated by the completion of ground return circuits in the IBM 709. Indicators 1B1 through 1B7 are not engraved but are provided with Mylar inserts for nomenclating by any suitable means; e.g., India ink or typewriter. A nonpermanent engraving permits the rapid change of indicator nomenclature as required. Indicator nomenclature will be assigned by the computer programmers. The eighth indicator (1A1), an audible alarm, is discussed in the next paragraph.

2.3.6 Audible Alarm and Indicator Circuitry

Because the two audible alarm circuits for the Goddard console are operationally similar, only one of the circuits is discussed. (The Bermuda console has only one alarm circuit, which operates in the same manner as that of the Goddard console.)

When the computer B ground return is completed to terminal 6TB1A, the coil of relay 5B1 is energized, closing normally open contact groups 1 and 2; this completes the ground return for the audible alarm indicator. In addition, contact groups 3 and 4 close, completing a ground return. Closing of normally open contact group 4 energizes relay 5B14, closing contacts 5 and 12, which, in turn, energize the audible alarm. A RESET ALARM switch on the console, when depressed, will shut off the audible alarm without turning off the alarm indicator. Depressing the RESET ALARM switch (1S1) energizes 5B12 by completing a ground return through previously closed contact group 3 of relay 5B1. Energizing relay 5B12 opens a set of normally closed contacts to deselect relay 5B14, which turns off the audible alarm by breaking the ground return path at contacts 5 and 12. Control relay 5B12 is maintained in the energized state by the closing of contacts A and C on the relay when it is selected. The reset alarm circuit will remain energized until the alarm signal is opened in computer B.

The tone for audible alarm 6X1 (computer A, Goddard console only) is of a lower frequency than that for 5X1 because of the diode which is in series with the buzzer. The diode suppresses one-half of the 60-cycle sine wave on 6X1, which causes the buzzer to operate on a 60 half-cycle wave; the 5X1 buzzer operates on a full 60-cycle sine wave to produce 120 vibrations per second.

Note

Failure of diode type IN 540 in series with 6X1 will prevent the buzzer from working. The diode would have to be replaced.

CHAPTER 3**OPERATION****3.1 GENERAL**

This chapter provides information required to operate the Goddard and Bermuda Output Status Consoles, which includes paragraphs on the location and function of controls and indicators and on the operating procedures. Because the Bermuda console has facilities for monitoring only, no operating procedures are necessary for this console.

3.2 LOCATION AND FUNCTION OF CONTROLS AND INDICATORS

The controls and indicators for the Goddard and Bermuda consoles are located on the front panels of the consoles (figs. 3-1 and 3-2). Tables 3-1 and 3-2 list the controls and indicators and their functions for the Goddard and Bermuda consoles, respectively.

TABLE 3-1. GODDARD CONSOLE CONTROLS AND INDICATORS

Controls and Indicators	Function
POWER ON pushbutton	Applies power to the console. When power has been applied, the pushbutton illuminates, indicating a power-on condition.
POWER OFF pushbutton	Removes power from the console.
TEST IND pushbutton	This pushbutton, when depressed, causes all of the indicators to illuminate. The pushbutton is used to check the lamps in the indicators.
Sense lights	There are 14 sense lights on the console (seven for computer A and seven for computer B), used to provide monitoring information for the operator. Each light is separately activated by its associated computer, and the condition indicated by each light is controlled by the computer program. Therefore, nomenclature for these indicators is assigned by the computer programmers.

TABLE 3-1. GODDARD CONSOLE CONTROLS AND INDICATORS (cont'd)

Controls and Indicators	Function
ALARM AUDIBLE RESET pushbutton	These pushbuttons (one for computer A and one for computer B) are illuminated when an alarm condition exists. Like the sense lights, activation of the lights is accomplished by the computer. Depressing the pushbutton stops the audible alarm, but the pushbutton remains illuminated until the alarm condition is corrected.
COMPUTER TO OUTPUT switch	Used to activate circuitry in the Output Switch Unit which connects either the A or the B computer as a data source.
A SELECT indicator	Indicates that the A computer has been selected by the COMPUTER TO OUTPUT switch.
A CONFIRMED indicator	Lights when the switching circuitry in the Output Switch Unit has been completed, and indicates that the A computer is now connected as the source of output data.
B SELECT indicator	Indicates that the B computer has been selected by the COMPUTER TO OUTPUT switch.
B CONFIRMED indicator	Lights when the switching circuitry in the Output Switch Unit has been completed, and indicates that the B computer is now the source of output data.
COMPUTER TO D/A switch	Used to activate circuitry to connect computer A to Plot Board A and computer B to Plot Board B or to connect computer A to Plot Board B and computer B to Plot Board A.
SELECT NORMAL A-A & B-B indicator	Indicates that the COMPUTER TO D/A switch has been set to select circuitry to connect computer A to Plot Board A and computer B to Plot Board B.
CONFIRM NORMAL A-A & B-B indicator	Indicates that the circuitry to connect computer A to Plot Board A and computer B to Plot Board B has been completed.
SELECT CROSS A-B & B-A indicator	Indicates that the COMPUTER TO D/A switch has been set to select circuitry to connect computer A to Plot Board B and computer B to Plot Board A.
CONFIRM CROSS A-B & B-A indicator	Indicates that the circuitry to connect computer A to Plot Board B and computer B to Plot Board A has been completed.

TABLE 3-2. BERMUDA CONSOLE CONTROLS AND INDICATORS

Controls and Indicators	Function
POWER ON pushbutton	Applies power to the console. When power has been applied, the pushbutton illuminates, indicating a power-on condition.
POWER OFF pushbutton	Removes power from the console.
TEST IND pushbutton	This pushbutton, when depressed, causes all of the indicators to illuminate. The pushbutton is used to check the lamps in the indicators.
Sense lights	There are seven sense lights on the console, used to provide monitoring information for the operator. Each light is separately activated by the IBM 709 computer, and the condition indicated by each light is controlled by the computer program. Therefore, nomenclature for these indicators is assigned by the computer programmers.
ALARM AUDIBLE RESET	This pushbutton is illuminated by an alarm condition. Depressing the pushbutton stops the audible alarm, but the pushbutton remains illuminated until the alarm condition is corrected.

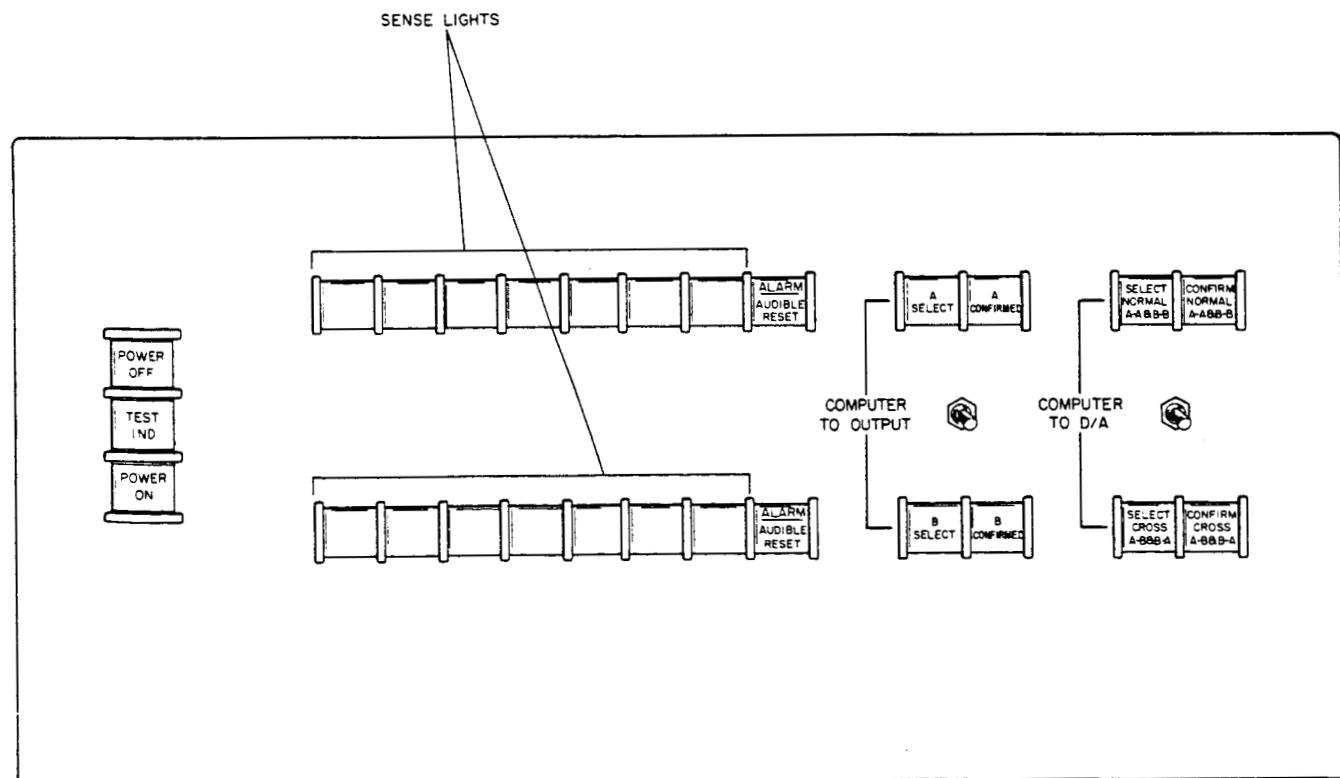


FIGURE 3-1. GODDARD CONSOLE, FRONT PANEL

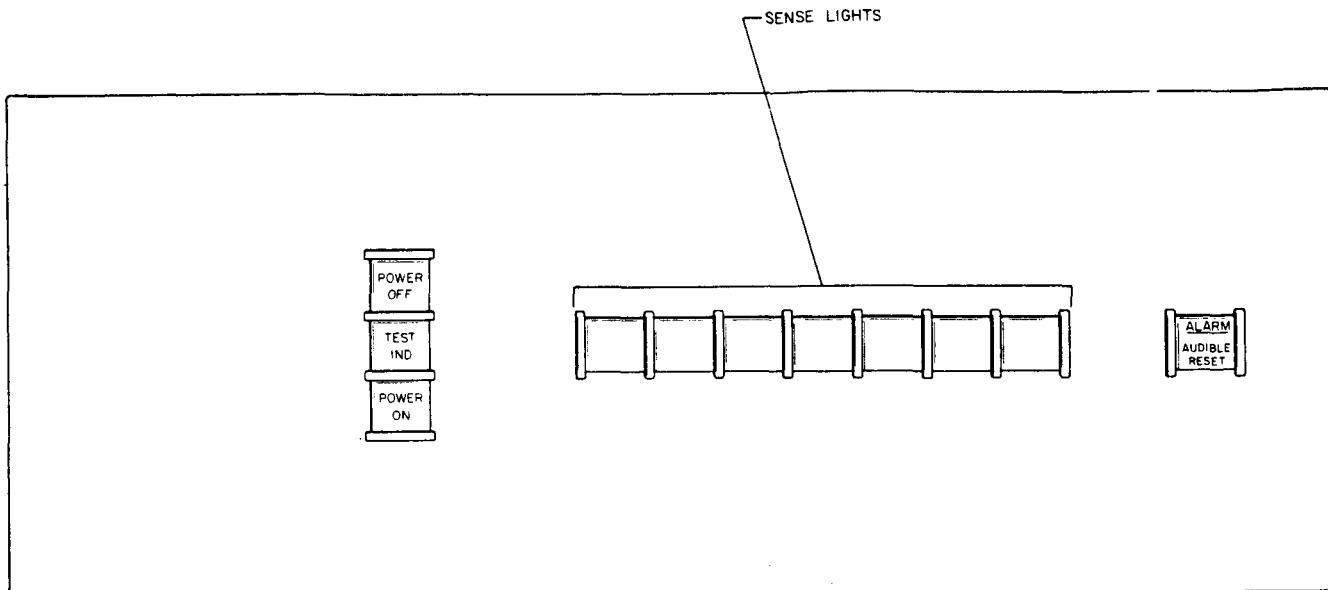


FIGURE 3-2. BERMUDA CONSOLE, FRONT PANEL

3.3 OPERATING PROCEDURES

3.3.1 General

The operating procedures for the Goddard and Bermuda consoles are described below. Paragraph 3.3.2 briefly describes the power-on and power-off procedures for both consoles. Paragraph 3.3.3 describes the operational procedures for the Goddard console. The Bermuda console is used for monitoring only and requires no operation other than power on and power off.

3.3.2 Power-On and Power-Off Procedures

The power-on and power-off procedures are the same for the two consoles, and therefore the following procedure will suffice for both.

Power is applied by depressing the POWER ON pushbutton which completes the a-c path to the power transformer of the unit. The POWER ON pushbutton also serves as a power-on indicator. Lamps within the pushbutton will light simultaneously with the application of a-c power, causing the colored plastic screen to illuminate. Depressing the POWER OFF pushbutton removes power from the unit and causes the power-on indicator to go out.

3.3.3 Goddard Console Operation

Facilities are provided on the Goddard console for the operator to exercise switching control over the real-time data of the two IBM 7090 computers. One switch (COMPUTER TO OUTPUT) selects either the A or the B computer as a data source for the Output Switch Unit. A second switch (COMPUTER TO D/A) connects the A and B computers to the A and B Plot Boards, respectively, or to the B and A Plot Boards, respectively.

3.3.3.1 COMPUTER TO OUTPUT Switch Operation

From observation of the sense lights on the console and from observation of the A and B Plot Boards, the operator decides which computer (A or B) is to be used as a data source for the Output Switch Unit. Assuming that the operator decides to use the A computer, the COMPUTER TO OUTPUT switch is placed in the A computer position (up) to initiate the desired selection. The A SELECT indicator lights immediately. After completion of the switching function initiated by the COMPUTER TO OUTPUT switch, the A CONFIRMED indicator will light, indicating that the A computer is now connected to the Output Switch Unit. The operation is similar if the B computer is selected.

3.3.3.2 COMPUTER TO D/A Switch Operation

The COMPUTER TO D/A switch is used to connect the A and B computers to the A and B Plot Boards, respectively, or to connect the A and B computers to the B and A Plot Boards, respectively. For normal selection (A computer to A Plot Board and B computer to B Plot Board), the operator places the COMPUTER TO D/A switch in the select normal (up) position. The SELECT NORMAL A-A & B-B indicator will light. When the switching circuitry has been completed, the CONFIRM NORMAL A-A & B-B indicator will light, indicating that the desired selection has been completed. Similarly, for cross selection (A computer to B Plot Board and B computer to A Plot Board), the COMPUTER TO D/A switch is placed in the cross select (down) position. The SELECT CROSS A-B & B-A indicator will light. When the switching circuitry is completed, the CONFIRM CROSS A-B & B-A indicator will light, indicating that the desired selection has been completed.

CHAPTER 4

INSTALLATION

4.1 GENERAL

This chapter provides installation information on the Goddard and Bermuda Output Status Consoles. The information is primarily intended as an aid should the consoles have to be reinstalled in another location. The external cables for the consoles are designed for the interconnection of the consoles with associated equipment at their present location. Should the consoles be relocated, new cables may have to be designed to meet the installation requirements of the new location.

4.2 PLACEMENT OF CONSOLES

The physical placement of the consoles in the building is determined by the floor plan for the building. Figure 4-1 shows the correct location of the cable floor hole in relation to the consoles.

4.3 WIRING OF CONSOLES

Interconnecting cables and power cables for the consoles are wired to terminal boards within the consoles. The 115vac power cable for the Goddard console is a 2-conductor cable using #14 wire. The hot lead is connected to terminal F of terminal board 6TB3, and the neutral lead is connected to terminal E of this terminal board (fig. 4-2). An equipment bond (#12 wire) is connected to terminal D of terminal board 6TB3.

Appendix A provides a wiring chart for the Goddard console as presently installed.

The input power cable connections for the Bermuda console are the same as for the Goddard console except that the equipment bond is #14 wire. Appendix B provides a wiring chart for the Bermuda console as presently installed.

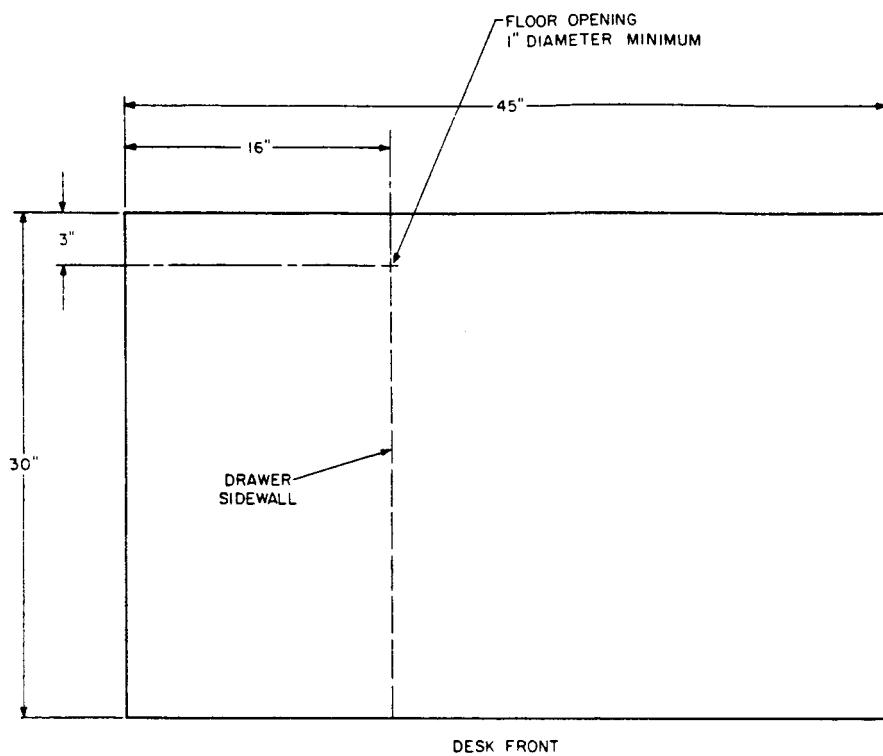


FIGURE 4-1. LOCATION OF FLOOR HOLE

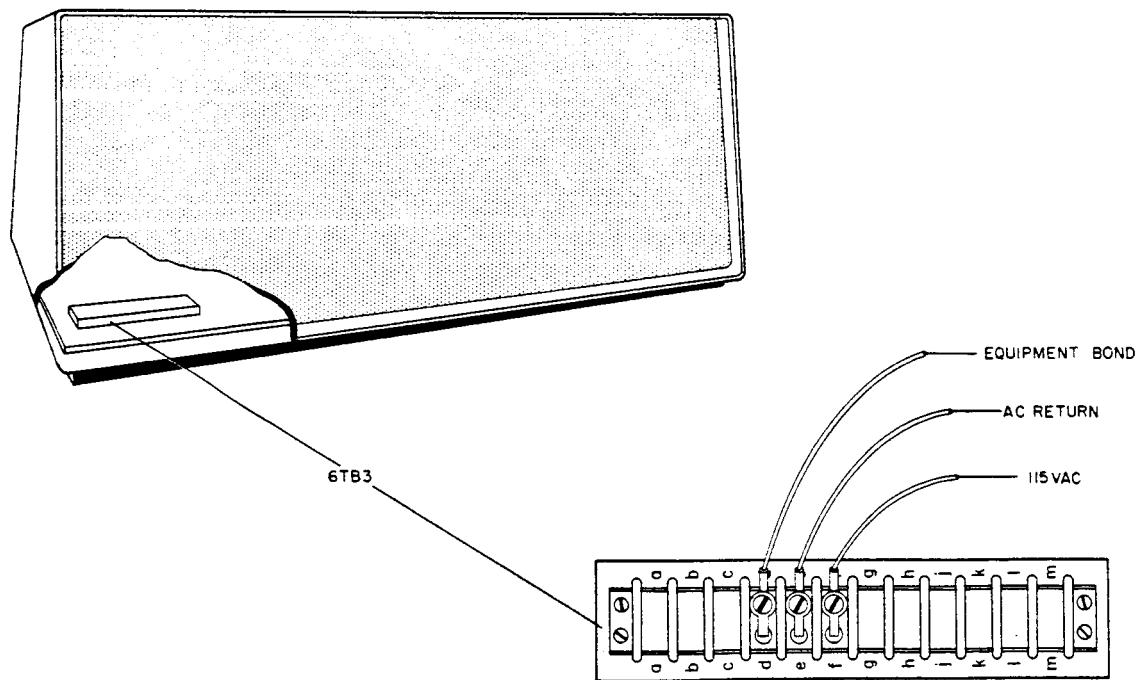


FIGURE 4-2. A-C POWER CONNECTIONS

CHAPTER 5

MAINTENANCE

5.1 GENERAL

This chapter provides information on component location, test procedures, and corrective maintenance for the Goddard and Bermuda Output Status Consoles. Additional information on corrective maintenance will be supplied at a later date, based on reports from the field.

5.2 COMPONENT LOCATION

The location of components in the Goddard console is shown in figures 5-1 and 5-2. The location of components in the Bermuda console is shown in figures 5-3 and 5-4.

5.3 TEST PROCEDURES

5.3.1 Unit Test, Goddard Console

The unit test for the Goddard console is divided into two portions: power off and power on. Each test is covered in the following paragraphs.

5.3.1.1 Power-Off Test

The power-off test is performed to check the following areas: interlock switch, a-c fuse, and selection control switches.

WARNING

To prevent injury to personnel, all power must be removed from the console before starting this test.

The power-off test is performed as follows:

1. Remove rear cover by disconnecting the four camlock fasteners.
2. Disconnect all external cables and all power cables from terminal boards 6TB1, 6TB2, and 6TB3.
3. Measure resistance between terminal F of terminal board 6TB3 and normally open contact of switch 1D3, using ohmmeter (a Simpson Model 260 multimeter or equivalent). The resistance should be 10 megohms or greater (open circuit).

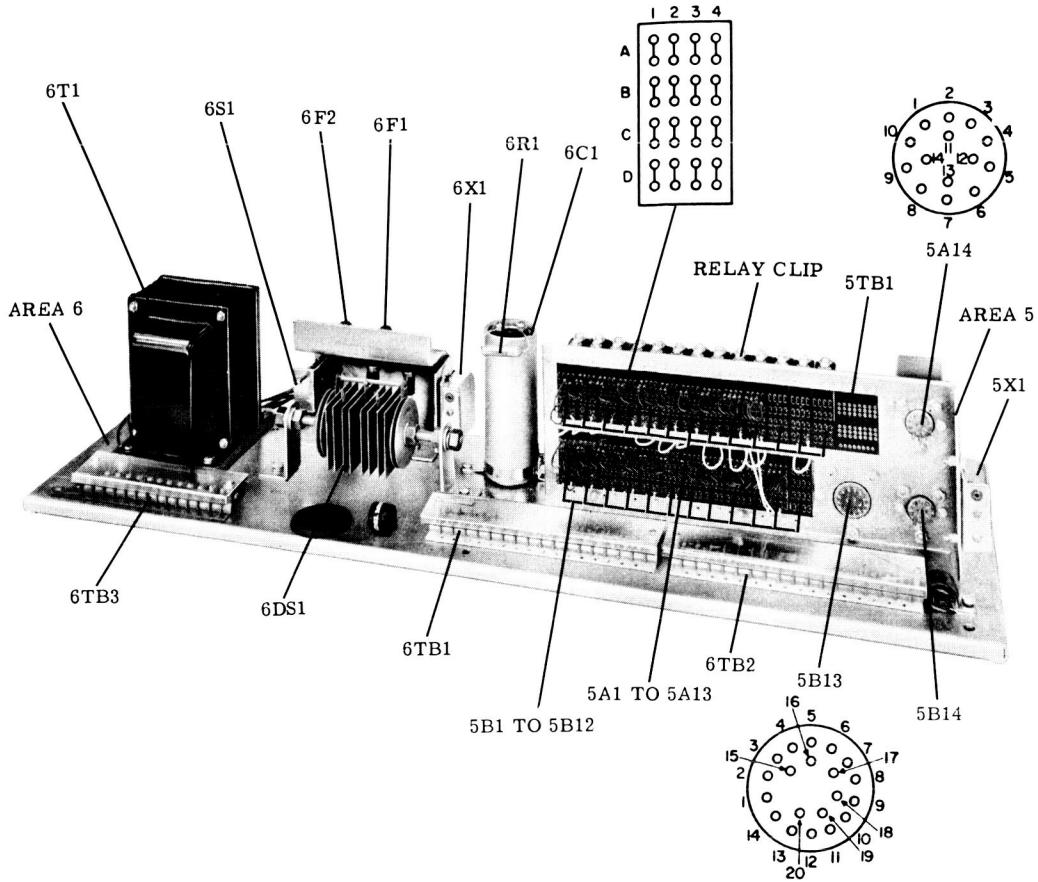


FIGURE 5-1. COMPONENT LOCATIONS, GODDARD MAIN CHASSIS

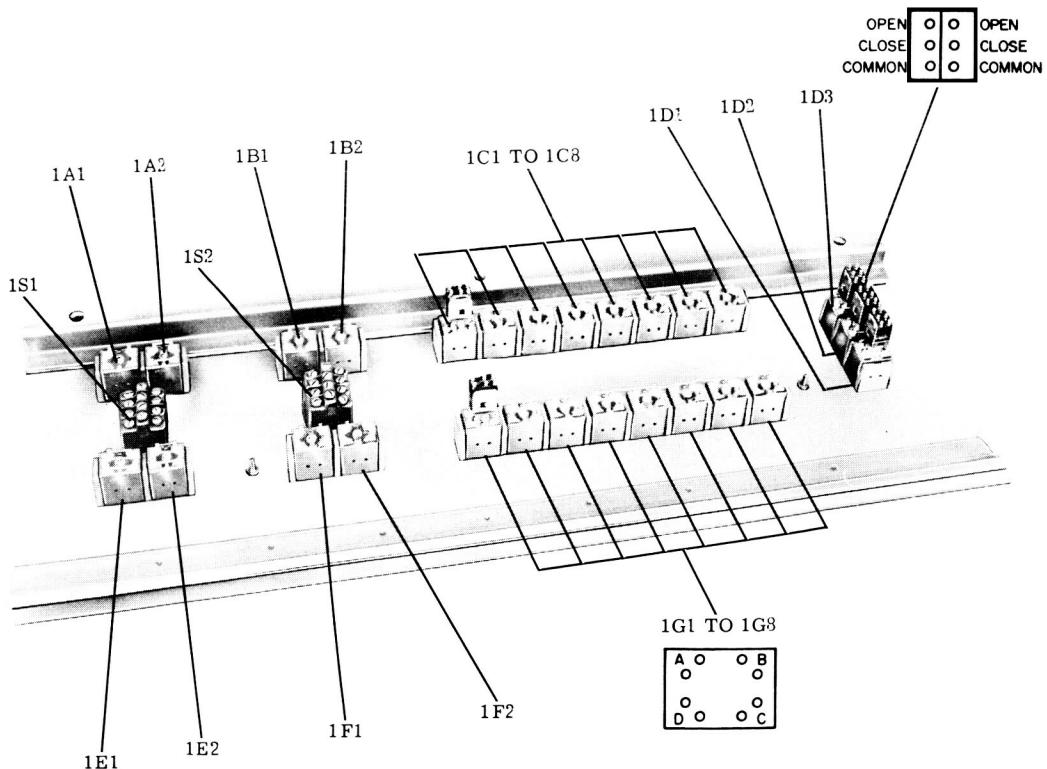


FIGURE 5-2. COMPONENT LOCATIONS, GODDARD FRONT PANEL

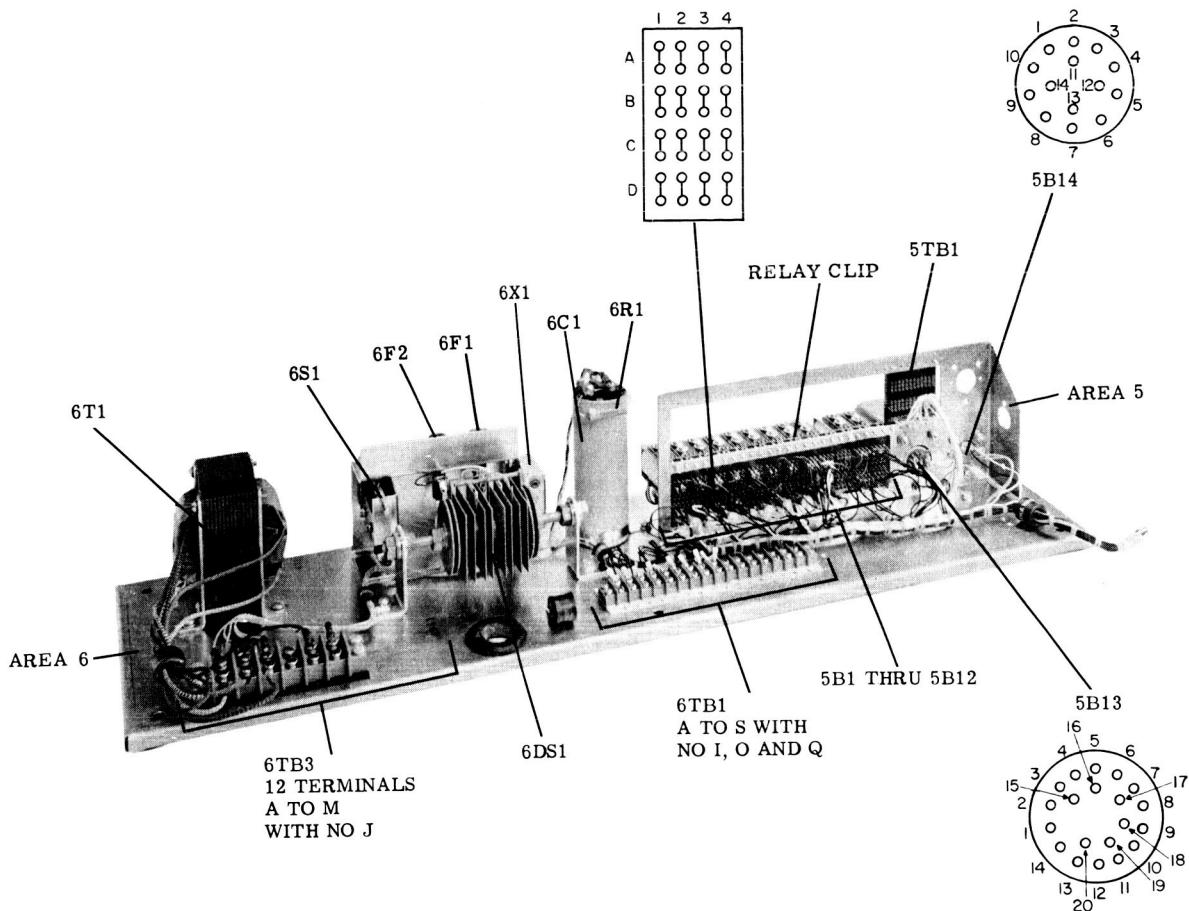


FIGURE 5-3. COMPONENT LOCATIONS, BERMUDA MAIN CHASSIS

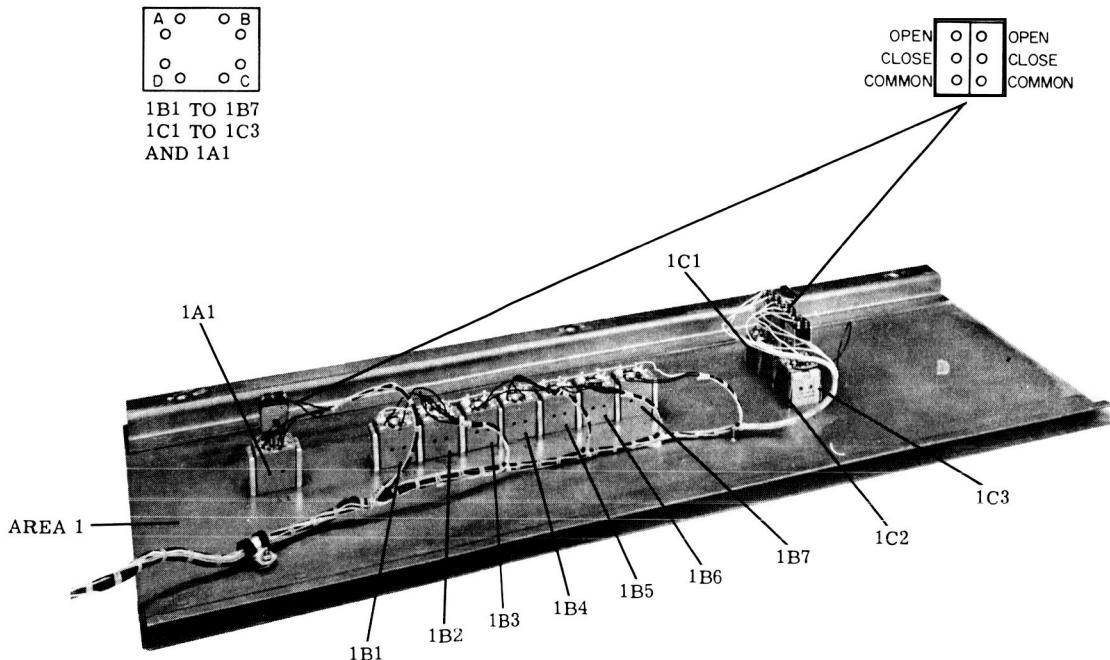


FIGURE 5-4. COMPONENT LOCATIONS, BERMUDA FRONT PANEL

TABLE 5-1. SELECTION SWITCH CHECK

Control Switch	Control Switch Position	Continuity (0 ± 0.5 Ohm)	Open Circuit (10 Megohm)
Computer to Output	Select A	6TB2-M to 6TB2-N	6TB2-L to 6TB2-M
	Select B	6TB2-L to 6TB2-M	6TB2-M to 6TB2-N
Computer to D/A	Select Normal A-A & B-B	6TB3-L to 6TB3-M	6TB3-K to 6TB3-L
	Select Cross A-B & B-A	6TB3-K to 6TB3-L	6TB3-L to 6TB3-M

TABLE 5-2. SELECTION INDICATORS CHECK

Control Switch	Control Switch Position	Only Select Indicator Lit
Computer to Output	Select A	A Select
	Select B	B Select
Computer to D/A	Select Normal A-A & B-B	Select Normal A-A & B-B
	Select Cross A-B & B-A	Select Cross A-B & B-A

4. Hold interlock switch 6S1 depressed, keeping ohmmeter connected as in step 3. The ohmmeter should read less than 0.5 ohm (continuity).
5. Refer to table 5-1 to check each position of COMPUTER TO OUTPUT and COMPUTER TO D/A switches. Table 5-1 lists the terminal points and resistance values to be measured for each position of the switches.

5.3.1.2 Power-On Test

The power-on test is performed to check the following areas: power control circuitry, power supply, indicator-testing circuitry, indicators-selection control switches, audible alarms, and status-indicating circuitry.

WARNING

This test requires that the maintenance man work inside the unit while power is applied. All safety precautions must be observed to prevent injury to personnel.

The power-on test is performed as follows:

1. Connect console to 115vac power source as follows:
 - a. 115vac to 6TB3-F
 - b. A-c return to 6TB3-E
 - c. Equipment bond to 6TB3-D
2. Pull actuator arm of interlock 1S3 forward to "cheat" the interlock.

WARNING

Dangerous potentials will be present in the console. Observe all safety precautions.

3. Depress POWER ON switch until the power-on indicator lights. If the indicator fails to light within 5 seconds, measure the d-c potential between 6C1 (-) and 6C1 (+). If approximately 48v is present, the indicator may be defective. The indicator should remain lit when the POWER ON pushbutton is released.

Note

There are four lamps, wired series-parallel, in the indicator. If the indicator does not appear uniformly lit, the lamps should be checked and replaced if defective.

4. Depress POWER OFF pushbutton (1D1). The power-on indicator should extinguish.
5. Depress POWER ON pushbutton.
6. Measure voltage from 6C1 (-) to 6C1 (+). The voltage should be 48 ± 6vdc.

CAUTION

Observe correct meter polarity to prevent damage to meter.

7. Depress TEST IND pushbutton. All indicators should light. Replace defective lamps.
8. Check selection indicators with COMPUTER TO OUTPUT and COMPUTER TO D/A switches set as shown in table 5-2.
9. Connect jumper wire (24-inch, insulated, #22 or larger wire with insulated alligator clips on each end) from terminal board 6TB1-J to terminal board 6TB2-A. The audible alarm should sound.

10. Depress ALARM AUDIBLE RESET pushbutton 1G1. The alarm should stop.
11. Disconnect jumper from 6TB2-A and then reconnect it to 6TB2-A. The alarm should sound.
12. Disconnect jumper from 6TB2-A. The alarm should stop.
13. Reconnect jumper between 6TB1-J and 6TB1-A. A second audible alarm with a different frequency should sound. If the frequency is the same as the first alarm, the diode between 5A14-5 and 5A14-11 is defective.
14. Depress ALARM AUDIBLE RESET pushbutton 1C1. The alarm should stop.
15. Repeat steps 11 and 12, using terminal connection 6TB1-A.
16. Jumper terminal 6TB1-J to each terminal shown in table 5-3. The indicated indicator lights should light.
17. Reconnect all external signal and power cables to the console.

TABLE 5-3. SENSE LIGHT CHECK

Terminal Jumpered to Terminal 6TB1-J	Indicator That Shall Light
6TB2-J	Confirm B (1F1)
6TB2-K	Confirm A (1B1)
6TB3-H	Confirm Cross A-B & B-A (1E1)
6TB3-I	Confirm Normal A-A & B-B
6TB1-A	1C1
6TB1-B	1C2
6TB1-C	1C3
6TB1-D	1C4
6TB1-E	1C5
6TB1-F	1C6
6TB1-G	1C7
6TB1-H	1C8

TABLE 5-3. SENSE LIGHT CHECK (cont'd)

Terminal Jumpered to Terminal 6TB1-J	Indicator That Shall Light
6TB2-A	1G1
6TB2-B	1G2
6TB2-C	1G3
6TB2-D	1G4
6TB2-E	1G5
6TB2-F	1G6
6TB2-G	1G7
6TB2-H	1G8

5.3.2 Unit Test, Bermuda Console

The unit test for the Bermuda console is divided into two portions: power off and power on. The unit test is covered in the following paragraphs.

5.3.2.1 Power-Off Test

The power-off test is performed to check the following: interlock switch, a-c fuse, and common d-c return points.

WARNING

To prevent injury to personnel, all power must be removed from the console before starting this test.

The power-off test is performed as follows:

1. Remove rear cover by disconnecting the four camlock fasteners.
2. Disconnect all external signal and power cables from terminal boards 6TB1 and 6TB3.
3. Measure resistance between terminals 6TB3-F and 1C3-C, using a Simpson Model 260 multimeter or equivalent. The resistance should be 10 megohms or greater (open circuit).
4. Hold interlock switch 6S1 depressed, keeping ohmmeter connected as in step 3. The resistance should be less than 0.5 ohm.

5. Measure resistance between terminal 6C1 (-) and the following points:

6TB1-5	6TB1-M
6TB1-K	6TB1-P
6TB1-L	6TB1-R
6TB1-S	

The resistance should be less than 0.5 ohm.

5.3.2.2 Power-On Test

The power-on test checks the following: power control circuitry, power supply, indicator-testing circuitry, indicators, status-indicating circuitry, and audible alarm.

WARNING

This test requires that the maintenance man work inside the console with power applied. All safety precautions must be observed to prevent injury to personnel.

The power-on test is performed as follows:

1. Connect console to a 115vac power source as follows:
 - a. 115vac to 6TB3-F
 - b. A-c return to 6TB3-E
 - c. Equipment bond to 6TB3-D
2. Pull actuator arm of interlock switch 6S1 forward to "cheat" the interlock.
3. Depress POWER ON switch (1C3) until power-on indicator lights. If indicator fails to light within 5 seconds, measure d-c potential between 6C1 (-) and 6C1 (+). If approximately 48vdc is present, the indicator may be defective. The indicator should remain lit after the POWER ON switch is released.
4. Depress POWER OFF switch. The power-on indication should go out.
5. Depress POWER ON switch.
6. Measure voltage between 6C1 (-) and 6C1 (+). The voltage should be 48 ± 6 vdc.

CAUTION

Observe correct meter polarity to avoid damage to meter.

7. Depress TEST IND switch. All indicators should light.

Note

There are four lamps, wired series-parallel, in each indicator. If any indicator does not appear uniformly lit, check the lamps.

8. Connect a jumper wire (24-inch, insulated #24 wire with insulated alligator clips on each end) between terminals 6TB1-J and 6TB1-H. The audible alarm should sound.
9. Depress ALARM AUDIBLE RESET switch 1A1. The audible alarm should stop.
10. Disconnect jumper to 6TB1-H and then reconnect it to 6TB1-H. The alarm should sound.
11. Disconnect jumper from 6TB1-H. The alarm should stop.
12. Connect jumper from 6TB1-J to each terminal listed below. The indicator listed for each terminal connected should light.

<u>Terminal Connection</u>	<u>Indicator</u>
6TB1-H	1A1
6TB1-G	1B1
6TB1-F	1B2
6TB1-E	1B3
6TB1-D	1B4
6TB1-C	1B5
6TB1-B	1B6
6TB1-A	1B7

13. Remove a-c power from unit and reconnect signal and power cables to unit.

5.4 CORRECTIVE MAINTENANCE

5.4.1 Front Panel Removal

The front panels of the Goddard and Bermuda consoles can be tilted forward to provide access to the components mounted on the panels. The procedure for opening the front panel is as follows:

1. Remove rear cover by disconnecting the four camlock fasteners holding it.
2. Disconnect the three camlock fasteners located along the top inside edge of the front panel. These fasteners are accessible through the rear of the unit.
3. Push forward on the upper portion of the front panel. The panel will pivot forward, providing access to the component side.

5.4.2 Replacement of Indicator Lamps

Each indicator on the Goddard and Bermuda consoles contains four lamps. The procedure for replacing these lamps is as follows:

1. Grip plastic display screen covering the indicator and pull forward. The display screen and the labeling insert behind the screen will come off.
2. Remove defective lamp, using the lamp extractor tool (Micro Switch Co., Part No. 15PA19).
3. Replace defective lamp, using the lamp extractor tool.
4. Position labeling insert and display screen on indicator and push into locked position.

CHAPTER 6

ILLUSTRATED PARTS BREAKDOWN

SECTION 1

INTRODUCTION

1.1 GENERAL

The replaceable assemblies, subassemblies, and detail parts of the Goddard and Bermuda Output Status Consoles are listed and illustrated in this chapter. These consoles are manufactured by the International Business Machines Corporation, Federal Systems Division, Kingston, N. Y.

1.2 PURPOSE AND USE

This Illustrated Parts Breakdown is used to obtain replacement parts and subassemblies for the Goddard and Bermuda consoles. A composite exploded view is used to show the disassembly of the consoles. The Group Assembly Parts List (Sect. 2) provides a listing of each part (keyed to index numbers on the exploded view) by part number, description, and the quantity used for each assembly. Because of the similarity of the two consoles, only one composite view is used to show the breakdown for both consoles. Wherever differences occur, they are noted in the listing.

For purposes of procurement, any item with a 562-xxxx part number should be referenced with the part number of the overall assembly on which the item is used. IBM Poughkeepsie part numbers are indicated by the suffix P. A NO NO entry in the Part Number column indicates that the assembly has no assigned part number.

SECTION 2

GROUP ASSEMBLY PARTS LIST

List & Index No.	Part. No.	Description	Units Per Assembly
1-	5203386	Output Status Console Assembly, Goddard (See fig. 6-1 for illustration.)	Ref
1-	5203385	Output Status Console Assembly, Bermuda (See fig. 6-1 for illustration.)	Ref
-1	562-1177	Base, Indicator Housing	1
-2	3002780	Nut, Self-Clinching	10
-3	562-1263	Housing Indicator Lights & Switches (Goddard)	1
-3	562-1155	Housing Indicator Lights & Switches (Bermuda)	1
-4	3514878	Camlock Stud	3
-5	3003867	Stud, Retaining Washer	3
-6	3212941	Rubber Grommet	1
-7	3003543	Camlock Receptacle	7
-8	562-1176	Mounting Base	1
-9	3002780	Nut, Self-Clinching	10
-10	3002785	Nut, Self-Clinching	5
-11	3002772	Nut, Self-Clinching	8
-12	562-1267	Spacer (Goddard)	6
-12	562-1266	Spacer (Bermuda)	6
-13	316080P	Transformer (6T1)	1
-14	562-1222	Shim	2
-15	3000578	Screw, Mach.	4

List & Index No.	Part. No.	Description	Units Per Assembly
-16	3000820	Washer, Flat	4
-17	3000835	Washer, Lock	4
-18	3003954	Marker Strip	1
-19	3003950	Barrier Strip	1
-20	3095708	Screw, Mach.	2
-21	3004048	Washer, Flat	4
-22	3095995	Washer, Lock	4
-23	No No.	Spacer	2
-24	3004161	Screw, Mach.	2
-25	316433P	Rectifier, Selenium (6DS1)	1
-26	562-1170	Bracket, Rectifier	2
-27	3019638	Screw, Mach.	2
-28	3212267	Washer, Flat	2
-29	3000836	Washer, Lock	2
-30	3085191	Clamp, Cable	1
-31	3000478	Screw, Mach.	1
-32	3000820	Washer, Flat	1
-33	3000835	Washer, Lock	1
-34	562-1171	Bracket, Fuse, Buzzer, and Switch	1
-35	3000578	Screw, Mach.	2
-36	3000820	Washer, Flat	2
-37	3000835	Washer, Lock	2
-38	3109148	Fuse Holder	2
-39	3097837	Fuse, 2-Amp (Goddard) (6F1)	1
-39	3097837	Fuse, 2-Amp (Bermuda) (6F1)	1

List & Index No.	Part. No.	Description	Units Per Assembly
-40	3208660	Fuse, 3-Amp (Goddard) (6F2)	1
-40	3097837	Fuse, 3-Amp (Bermuda) (6F2)	1
-41	3003619	Buzzer, 48vac (6 X 1) (5 X 1)	2
-42	3000569	Screw, Mach.	2
-43	3042343	Washer, Flat	4
-44	3097712	Washer, Lock	2
-45	3003795	Nut, Hex.	2
-46	3004200	Switch, Micro (6S1)	1
-47	3004746	Adjustable Actuator	1
-48	3000566	Screw, Mach.	2
-49	3042343	Washer, Flat	2
-50	3097712	Washer, Lock	2
-51	3000974	Grommet, Rubber	1
-52	3002603	Resistor, 1K, 5 W (6R1)	1
-53	3095925	Ring-Tongue Terminal	2
-54	134954P	Capacitor, 2000 Mfd (6C1)	1
-55	3000578	Screw, Mach.	2
-56	3000820	Washer, Flat	2
-57	3000835	Washer, Lock	2
-58	3514878	Stud, Camlock	4
-59	3003867	Washer, Stud-Retaining	4
-60	562-1264	Cover, Rear	1
-61	3000820	Washer, Lock	5
-62	3000835	Washer, Flat	5
-63	3000752	Nut, Hex.	5

List & Index No.	Part No.	Description	Units Per Assembly
-64	3004121	Relay, 4-PoS, Wire-Contact	25
-65	3004126	Clip, Terminal	25
-66	3025061	Clip, Moulding	6
-67	3000561	Screw, Mach.	84
-68	3000833	Washer, Lock	84
-69	562-1359	Terminal Board (Goddard) (5TB1)	1
-69	3097999	Terminal Board (Bermuda) (5TB1)	1
-70	3003731	Jumper	13
-71	3003656	Socket, 14-Pin Relay	2
-72	3000561	Screw, Mach.	4
-73	3207108	Washer, Flat	8
-74	3000833	Washer, Lock	4
-75	3000750	Nut, Hex.	4
-76	3003150	Relay, Enclosed (5A14)	2
-77	3042343	Washer, Flat	12
-78	3097712	Washer, Lock	6
-79	3003795	Nut, Hex.	6
-80	562-1167	Bracket, Relay Mtg.	1
-81	3019638	Screw, Mach.	3
-82	3212267	Washer, Flat	3
-83	3000836	Washer, Lock	3
-84	3127581	Relay (5B13)	1
-85	3042343	Washer, Flat	3
-86	3097712	Washer, Lock	3
-87	3003795	Nut, Hex.	3

List & Index No.	Part No.	Description	Units Per Assembly
-88	3003619	Buzzer, 38vac (5 X 1;	1
-89	3000974	Grommet, Rubber	1
-90	3000578	Screw, Mach.	2
-91	3042343	Washer, Flat	4
-92	3097712	Washer, Lock	2
-93	3003795	Nut, Hex.	2
-94	3210669	Clamp, Cable 3/8 I. D.	1
-95	3000578	Screw, Mach.	1
-96	3000820	Washer, Flat	1
-97	3000835	Washer, Lock	1
-98	562-1169	Retaining Angle	1
-99	3000570	Screw, Mach.	3
-100	3000820	Washer, Flat	3
-101	3000835	Washer, Lock	3
-102	3004916	Marker Strip	2
-103	3004727	Barrier Strip	2
-104	3000562	Screw, Mach.	8
-105	3207108	Washer, Flat	8
-106	3000833	Washer, Lock	8
-107	3000995	Grommet, Rubber (Goddard)	1
-107	3000982	Grommet, Rubber (Bermuda)	1
-108	562-1360	External Cable	Ref
-109	562-1329	Safety Shield	1
-110	3127645	Switch, Micro	5
-111	3127706	Switch Operator	3

List & Index No.	Part No.	Description	Units Per Assembly
-112	3127296	Switch Operator	2
-113	3127692	Indicator Unit, Small	22
-114	3210589	Lamp, 28v	100
-115	3509851	Display Screen, Red	1
-116	562-1107	Insert, Engraved	1
-117	3509860	Display Screen, Blue	1
-118	562-1108	Insert, Engraved	1
-119	3509859	Display Screen, Green	5
-120	562-1106	Insert, Engraved	1
-121	3509861	Display Screen, White	18
-122	3509858	Display Screen, Yellow	2
-123	562-1125	Insert, Engraved	2
-124	562-1120	Insert, Engraved	1
-125	562-1122	Insert, Engraved	1
-126	562-1330	Insert, Engraved	1
-127	562-1333	Insert, Engraved	1
-128	562-1332	Insert, Engraved	1
-129	562-1331	Insert, Engraved	1
-130	562-1331	Insert, Engraved	1
-131	562-1124	Insert, Engraved	1
-132	3509864	Barrier, Long	4
-133	3509863	Barrier, Short	30
-134	4TL1-3D	Micro Toggle Switch	2
-135	562-1168	Panel, Indicator Lights and Switches (Goddard)	1
-135	562-1179	Panel, Indicator Lights and Switches (Bermuda)	1

List & Index No.	Part No.	Description	Units Per Assembly
-136	3210669	Clamp, Cable 3/8 I. D.	1
-137	3212471	Clamp, Cable 1/4 I. D.	1
-138	3000820	Washer, Lock No. 8	5
-139	3000835	Washer, Flat	5
-140	3000752	Nut, Hex.	5
-141	562-1346	Name Plate	1
-142	562-1223	Desk, Single-Pedestal	1

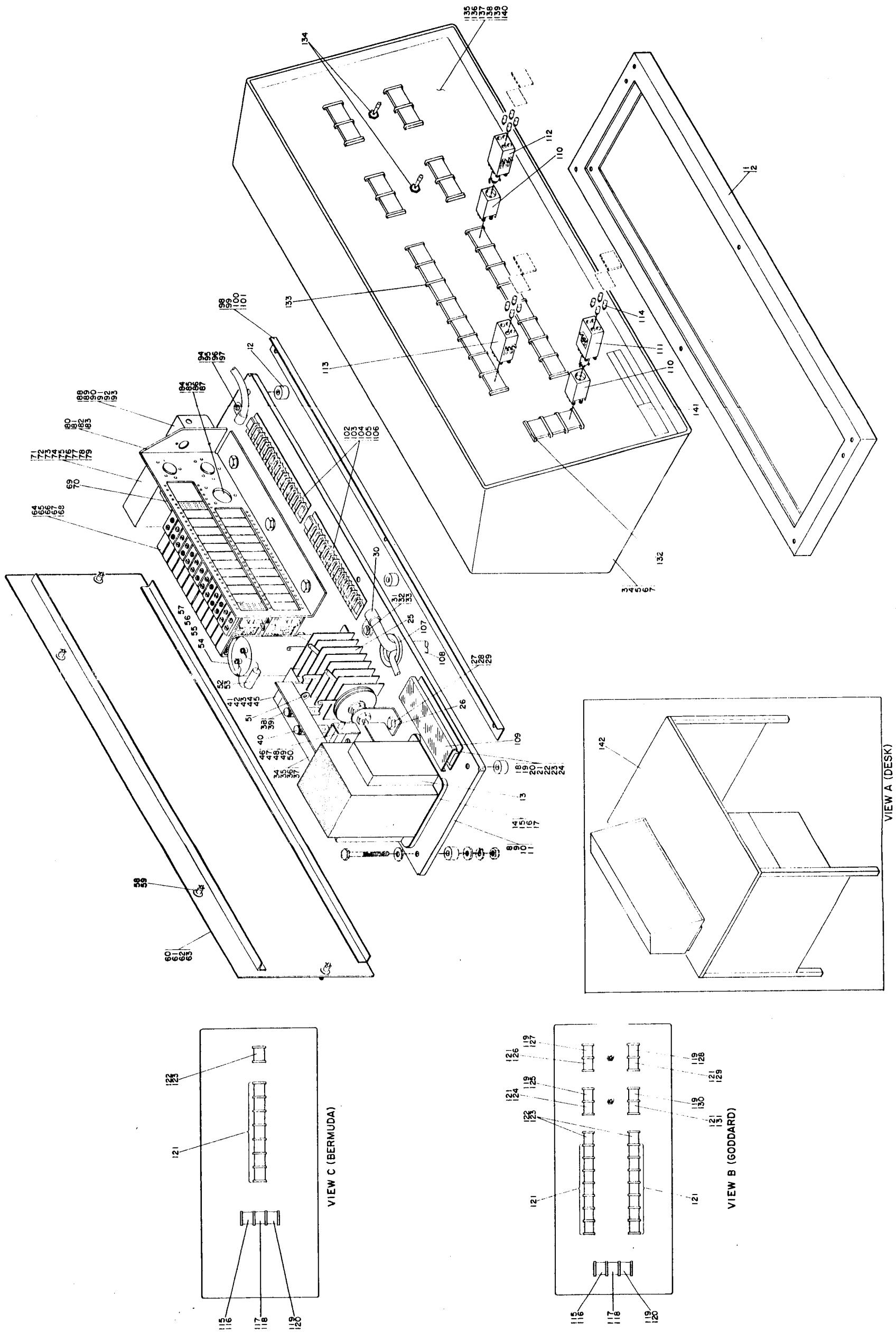


FIGURE 6-1. OUTPUT STATUS CONSOLE, EXPLODED VIEW (COMPOSITE)

APPENDIX A
WIRING CHARTS, GODDARD

This appendix contains the following wiring charts:

Table A-1. External Cabling, Goddard

Table A-2. Internal Cabling, Goddard

Table A-3. Jumper Chart, Goddard

TABLE A-1. EXTERNAL CABLING, GODDARD

Function	Type Wire	From		To	
		Cannon AN22-14 IBM 7090 DCC's 7281 I/O Panel	Conn	Term	Conn
Sense Output 1	S*	SIG	A-DCC-23	A	6TB1
	S	RTN	A-DCC-23	B	6TB1
Sense Output 2	S	SIG	A-DCC-23	C	6TB1
	S	RTN	A-DCC-23	D	6TB1
Sense Output 3	S	SIG	A-DCC-23	E	6TB1
	S	RTN	A-DCC-23	F	6TB1
Sense Output 4	S	SIG	A-DCC-23	G	6TB1
	S	RTN	A-DCC-23	H	6TB1
Sense Output 5	S	SIG	A-DCC-23	J	6TB1
	S	RTN	A-DCC-23	K	6TB1
Sense Output 6	S	SIG	A-DCC-23	L	6TB1
	S	RTN	A-DCC-23	M	6TB1
Sense Output 7	S	SIG	A-DCC-23	N	6TB1
	S	RTN	A-DCC-23	P	6TB1
Sense Output 8 (alarm)	S	SIG	A-DCC-23	R	6TB1
	S	RTN	A-DCC-23	S	6TB1
Sense Output 1	S	SIG	B-DCC-23	A	6TB2
	S	RTN	B-DCC-23	B	6TB2
Sense Output 2	S	SIG	B-DCC-23	C	6TB2
	S	RTN	B-DCC-23	D	6TB2
Sense Output 3	S	SIG	B-DCC-23	E	6TB2
	S	RTN	B-DCC-23	F	6TB2
Sense Output 4	S	SIG	B-DCC-23	G	6TB2
	S	RTN	B-DCC-23	H	6TB2
Sense Output 5	S	SIG	B-DCC-23	J	6TB2
	S	RTN	B-DCC-23	K	6TB2
Sense Output 6	S	SIG	B-DCC-23	L	6TB2
	S	RTN	B-DCC-23	M	6TB2
Sense Output 7	S	SIG	B-DCC-23	N	6TB2
	S	RTN	B-DCC-23	P	6TB1

TABLE A-1. EXTERNAL CABLING, GODDARD (cont'd)

Function	Type Wire		From		To	
			Conn	Term	Output Status Console	Conn
Sense Output 8 (Alarm)	S*	SIG	B-DCC-23	R	6TB2	A
	S	RTN	B-DCC-23	S	6TB1	R
Power	#12	BLK	Hot		6TB3	F
	#12	White	Neutral		6TB3	E
Equip Bond	#12	Green	GND		6TB3	D
Select B			Term. Bd**	16	6TB2	L
Common (Select B)			Term. Bd**	9	6TB2	M
Confirm A			Term. Bd**	1	6TB2	K
Confirm B			Term. Bd**	12	6TB2	J
Common (Confirm A & B)			Term. Bd**	6	6TB1	M
Select Cross			J21***	N	6TB3	K
Common (Select Cross)			J21***	n	6TB3	L
Confirm Normal			J21***	K	6TB3	I
Confirm Cross			J21***	M	6TB3	H
Common (Confirm Normal & Cross)			J21***	L	6TB1	N
Select Cross			J21***	D	6TB3	M

*S - Signal

**Terminal board in Output Switch Unit

***J21 on D/A Converter "A"

TABLE A-2. INTERNAL CABLING, GODDARD

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3002533	3061018	6TB3-F	6F1-A	ST-3/8
3002533	3061003	6S1-NO	6F1-B	ST-3/8
3002533	3051003	6S1-C	5B13-5	ST-3/8
3002533	ST-3/8	1D3E-NO	5B13-5	ST-3/8
3002533	ST-3/8	1D3E-C	5B13-16	ST-3/8
3002533	3061018	6TB3-C	5B13-16	ST-3/8
3002533	3061018	6TB3-A	5X1-B	3061003
3002533	3061018	6TB3-B	5B14-12	ST-3/8
3002533	ST-3/8	5A14-12	5B14-12	ST-3/8
3002533	ST-3/8	5A14-11	6X1-A	3061003
3002533	ST-3/8	5B14-5	5X1-A	3061003
3002533	3061003	6X1-B	5X1-B	3061003
3002533	ST-3/8	6DS1-YEL	6TB3-A	3061018
3002533	ST-3/8	6DS1-YEL	6TB3-B	3061018
3002540	ST-3/8	6DS1-RED	6C1-(+)	3061001
3002540	ST-3/8	6F2-A	6C1-(+)	3061001
3002522	ST-3/8	6DS1-BLK	6C1-(-)	3061001
3002522	3501481	6TB1-J	6C1-(-)	3061001
3509278	ST-3/8	1E2-B2	1F1-A2	ST-1/4
3509278	ST-3/8	1A2-B2	1B1-A2	ST-1/4
3509278	ST-1/4	1C1-A2	1B2-B2	ST-1/4
3509278	ST-1/4	1C8-A2	1D3-B1	ST-1/4
3509278	ST-1/4	1F2-B2	1G1-A2	ST-1/4
3509278	ST-3/8	1D1E-C	5B13-3	ST-3/8
3509278	ST-3/8	6F2-B	5TB1-J1	3503787
3509278	3002762	5B9-D1	5TB1-J2	3503787
3509278	3002762	5B1-D1	5TB1-J3	3503787
3509278	3002762	5B2-D1	5TB1-J4	3503787
3509278	3002762	5B3-D1	5TB1-J5	3503787
3509278	3002762	5B4-D1	5TB1-J6	3503787
3509278	3002762	5B5-D1	5TB1-J7	3503787
3509278	3002762	5B6-D1	5TB1-J8	3503787
3509278	3002762	5B7-D1	5TB1-J9	3503787
3509278	3002762	5B8-D1	5TB1-J10	3503787
3509278	3002762	5A1-D1	5TB1-J11	3503787

TABLE A-2. INTERNAL CABLING, GODDARD (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	3002762	5A2-D1	5TB1-J12	3503787
3509278	3002762	5A3-D1	5TB1-H1	3503787
3509278	3002762	5A4-D1	5TB1-H2	3503787
3509278	3002762	5A5-D1	5TB1-H3	3503787
3509278	3002762	5A6-D1	5TB1-H4	3503787
3509278	3002762	5A7-D1	5TB1-H5	3503787
3509278	3002762	5A8-D1	5TB1-H6	3503787
3509278	3002762	5B12-B2	5TB1-H7	3503787
3509278	3002762	5A12-B2	5TB1-H8	3503787
3509278	3002762	5A12-A2	5A14-3	ST-3/8
3509278	3002762	5B12-A2	5B14-3	ST-3/8
3509278	3002762	5A1-D3	6TB1-A	3501481
3509278	3002762	5A2-D3	6TB1-B	3501481
3509278	3002762	5A3-D3	6TB1-C	3501481
3509278	3002762	5A4-D3	6TB1-D	3501481
3509278	3002762	5A5-D3	6TB1-E	3501481
3509278	3002762	5A6-D3	6TB1-F	3501481
3509278	3002762	5A7-D3	6TB1-G	3501481
3509278	3002762	5A8-D3	6TB1-H	3501481
3509278	3002762	5A9-C1	6TB1-A	3501481
3509278	3002762	5A9-C2	6TB1-B	3501481
3509278	3002762	5A9-C3	6TB1-C	3501481
3509278	3002762	5A9-C4	6TB1-D	3501481
3509278	3002762	5A10-C1	6TB1-E	3501481
3509278	3002762	5A10-C2	6TB1-F	3501481
3509278	3002762	5A10-C3	6TB1-G	3501481
3509278	3002762	5A10-C4	6TB1-H	3501481
3509278	3002762	5B1-D3	6TB2-A	3501481
3509278	3002762	5B2-D3	6TB2-B	3501481
3509278	3002762	5B3-D3	6TB2-C	3501481
3509278	3002762	5B4-D3	6TB2-D	3501481
3509278	3002762	5B5-D3	6TB2-E	3501481
3509278	3002762	5B6-D3	6TB2-F	3501481
3509278	3002762	5B7-D3	6TB2-G	3501481
3509278	3002762	5B8-D3	6TB2-H	3501481

TABLE A-2. INTERNAL CABLING, GODDARD (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	3002762	5B9-C1	6TB2-A	3501481
3509278	3002762	5B9-C2	6TB2-B	3501481
3509278	3002762	5B9-C3	6TB2-C	3501481
3509278	3002762	5B9-C4	6TB2-D	3501481
3509278	3002762	5B10-C1	6TB2-E	3501481
3509278	3002762	5B10-C2	6TB2-F	3501481
3509278	3002762	5B10-C3	6TB2-G	3501481
3509278	3002762	5B10-C4	6TB2-H	3501481
3509278	3002762	5B11-C1	6TB2-J	3501481
3509278	3002762	5B11-C2	6TB2-K	3501481
3509278	3002762	5B11-C3	1S2-B1	3503803
3509278	3002762	5B11-C4	1S2-B3	3503803
3509278	ST-1/4	1F1-C2	6TB2-J	3501481
3509278	ST-1/4	1B1-C2	6TB2-K	3501481
3002540	3061003	1S2-A3	6TB2-L	3501481
3002540	3061003	1S2-A2	6TB2-M	3501481
3002540	3061003	1S2-A1	6TB2-N	3501481
3509277	3002762	5B1-A1	6TB1-J	3501481
3509277	3002762	5A1-C1	6TB1-J	3501481
3509277	3002762	5B11-A4	5B13-15	ST-3/8
3509277	3002762	5A10-A4	1S1-B2	3503803
3509278	3002762	5A1-C4	1C1-C2	ST-1/4
3509278	3002762	5A1-C3	1C1-D2	ST-1/4
3509278	3002762	5A2-C1	1C2-C2	ST-1/4
3509278	3002762	5A2-C2	1C2-D2	ST-1/4
3509278	3002762	5A3-C2	1C3-C2	ST-1/4
3509278	3002762	5A3-C1	1C3-D2	ST-1/4
3509278	3002762	5A4-C1	1C4-C2	ST-1/4
3509278	3002762	5A4-C2	1C4-D2	ST-1/4
3509278	3002762	5A5-C2	1C5-C2	ST-1/4
3509278	3002762	5A5-C1	1C5-D2	ST-1/4
3509278	3002762	5A6-C1	1C6-C2	ST-1/4
3509278	3002762	5A6-C2	1C6-D2	ST-1/4
3509278	3002762	5A7-C2	1C7-C2	ST-1/4
3509278	3002762	5A7-C1	1C7-D2	ST-1/4

TABLE A-2. INTERNAL CABLING, GODDARD (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	3002762	5A8-C1	1C8-C2	ST-1/4
3509278	3002762	5A8-C2	1C8-D2	ST-1/4
3509278	3002762	5B1-C2	1G1-C2	ST-1/4
3509278	3002762	5B1-C1	1G1-D2	ST-1/4
3509278	3002762	5B2-C1	1G2-C2	ST-1/4
3509278	3002762	5B2-C2	1G2-D2	ST-1/4
3509278	3002762	5B3-C2	1G3-C2	ST-1/4
3509278	3002762	5B3-C1	1G3-D2	ST-1/4
3509278	3002762	5B4-C1	1G4-C2	ST-1/4
3509278	3002762	5B4-C2	1G4-D2	ST-1/4
3509278	3002762	5B5-C2	1G5-C2	ST-1/4
3509278	3002762	5B5-C1	1G5-D2	ST-1/4
3509278	3002762	5B6-C1	1G6-C2	ST-1/4
3509278	3002762	5B6-C2	1G6-D2	ST-1/4
3509278	3002762	5B7-C2	1G7-C2	ST-1/4
3509278	3002762	5B7-C1	1G7-D2	ST-1/4
3509278	3002762	5B8-C1	1G8-C2	ST-1/4
3509278	3002762	5B8-C2	1G8-D2	ST-1/4
3509278	3002762	5B9-D3	1D2E-NO	ST-3/8
3509278	3002762	5A12-C1	1C1E-C	ST-3/8
3509278	3002762	5A12-A1	1C1E-NO	ST-3/8
3509278	3002762	5B12-C1	1G1E-C	ST-3/8
3509278	3002762	5B12-A1	1G1E-NO	ST-3/8
3509278	3002762	5A1-A1	5A13-2	ST-3/8
3509278	3002762	5B1-A4	5B14-2	ST-3/8
3509278	3002762	5A1-A2	5A12-C1	3503787
3509278	3002762	5B1-A3	5B12-C1	3503787
3509277	ST 1/4	1S1-B2	1S2B2	ST-1/4
3509278	ST 1/4	1E1-A2	6F2B	ST-3/8
3509278	ST 3/8	1A1-A2	6F2B	ST-3/8
3509278	3002762	5A13-C1	6TB3-H	3501481
3509278	3002762	5A13-C2	6TBC-I	3501481
3509278	3002762	5A13-C3	1S1-B3	ST-1/4
3509278	3002762	5A13-C4	1S1-B1	ST-1/4
3509278	ST 1/4	5B13-20	5TB1-H7	3002762

TABLE A-2. INTERNAL CABLING, GODDARD (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	ST 1/4	5B13-13	1D1E	ST 1/4
3509278	ST 3/8	1S1-C3	6TB3-M	3501481
3509278	ST 3/8	1S1-A2	6TB3-L	3501481
3509278	ST 3/8	1S1-A3	6TB3-K	3501481
3509278	ST 3/8	1S1-B1	1A2-C2	ST 1/4
3509278	ST 3/8	1S1-B3	1E2-C2	ST 1/4
3509278	ST 1/4	1A1-C2	6TB3-I	3501481

TABLE A-3. JUMPER CHART, GODDARD

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	ST-1/4	1C1-A1	1B1-D1	ST-1/4
3509278	ST-1/4	1C1-B1	1B1-C1	ST-1/4
3509278	ST-1/4	1C1-A2	1B1-B2	ST-1/4
3509278	ST-1/4	1C2-B2	1B1-B2	ST-1/4
3509278	ST-1/4	1C2-A1	1B2-D1	ST-1/4
3509278	ST-1/4	1C2-B1	1B2-C1	ST-1/4
3509278	ST-1/4	1C2-B2	1B2-A2	ST-1/4
3509278	ST-1/4	1C3-A2	1B2-A2	ST-1/4
3509278	ST-1/4	1C3-A1	1B3-D1	ST-1/4
3509278	ST-1/4	1C3-B1	1B3-C1	ST-1/4
3509278	ST-1/4	1C3-A2	1B3-B2	ST-1/4
3509278	ST-1/4	1C4-B2	1B3-B2	ST-1/4
3509278	ST-1/4	1C4-A1	1B4-D1	ST-1/4
3509278	ST-1/4	1C4-B1	1B4-C1	ST-1/4
3509278	ST-1/4	1C4-B2	1B4-A2	ST-1/4
3509278	ST-1/4	1C5-A2	1B4-A2	ST-1/4
3509278	ST-1/4	1C5-A1	1B5-D1	ST-1/4
3509278	ST-1/4	1C5-B1	1B5-C1	ST-1/4
3509278	ST-1/4	1C5-A2	1B5-B2	ST-1/4
3509278	ST-1/4	1C6-B2	1B5-B2	ST-1/4
3509278	ST-1/4	1C6-A1	1B6-D1	ST-1/4
3509278	ST-1/4	1C6-B1	1B6-C1	ST-1/4
3509278	ST-1/4	1C6-B2	1B6-A2	ST-1/4
3509278	ST-1/4	1C7-A2	1B6-A2	ST-1/4
3509278	ST-1/4	1C7-A1	1B7-D1	ST-1/4
3509278	ST-1/4	1C7-B1	1B7-C1	ST-1/4
3509278	ST-1/4	1C7-A2	1B7-B2	ST-1/4
3509278	ST-1/4	1C8-B2	1B7-B2	ST-1/4
3509278	ST-1/4	1C8-A1	1B8-D1	ST-1/4
3509278	ST-1/4	1C8-B1	1B8-C1	ST-1/4
3509278	ST-1/4	1C8-A2	1B8-B2	ST-1/4
3509278	ST-1/4	1G1-A1	1E1-D1	ST-1/4
3509278	ST-1/4	1G1-B1	1E1-C1	ST-1/4
3509278	ST-1/4	1G1-A2	1E1-B2	ST-1/4
3509278	ST-1/4	1G2-B2	1E1-B2	ST-1/4
3509278	ST-1/4	1G2-A1	1E2-D1	ST-1/4
3509278	ST-1/4	1G2-B1	1E2-C1	ST-1/4
3509278	ST-1/4	1G2-B2	1E2-A2	ST-1/4
3509278	ST-1/4	1G3-A2	1E2-A2	ST-1/4
3509278	ST-1/4	1G3-A1	1E3-D1	ST-1/4

TABLE A-3. JUMPER CHART, GODDARD (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	ST-1/4	1G3-B1	1E3-C1	ST-1/4
3509278	ST-1/4	1G3-A2	1E3-B2	ST-1/4
3509278	ST-1/4	1G4-B2	1E3-B2	ST-1/4
3509278	ST-1/4	1G4-A1	1E4-D1	ST-1/4
3509278	ST-1/4	1G4-B1	1E4-C1	ST-1/4
3509278	ST-1/4	1G4-B2	1E4-A2	ST-1/4
3509278	ST-1/4	1G5-A2	1E4-A2	ST-1/4
3509278	ST-1/4	1G5-A1	1E5-D1	ST-1/4
3509278	ST-1/4	1G5-B1	1E5-C1	ST-1/4
3509278	ST-1/4	1G5-A2	1E5-B2	ST-1/4
3509278	ST-1/4	1G6-B2	1E5-B2	ST-1/4
3509278	ST-1/4	1G6-A1	1E6-D1	ST-1/4
3509278	ST-1/4	1G6-B1	1E6-C1	ST-1/4
3509278	ST-1/4	1G6-B2	1E6-A2	ST-1/4
3509278	ST-1/4	1G7-A2	1E6-A2	ST-1/4
3509278	ST-1/4	1G7-A1	1E7-D1	ST-1/4
3509278	ST-1/4	1G7-B1	1E7-C1	ST-1/4
3509278	ST-1/4	1G7-A2	1E7-B2	ST-1/4
3509278	ST-1/4	1G8-B2	1E7-B2	ST-1/4
3509278	ST-1/4	1G8-A1	1E8-D1	ST-1/4
3509278	ST-1/4	1G8-B1	1E8-C1	ST-1/4
3509278	ST-1/4	1G8-A2	1E8-B2	ST-1/4
3509278	ST-1/4	1F1-A1	1D1-D1	ST-1/4
3509278	ST-1/4	1F1-B1	1D1-C1	ST-1/4
3509278	ST-1/4	1F1-C2	1D1-D2	ST-1/4
3509278	ST-1/4	1F1-A2	1D1-B2	ST-1/4
3509278	ST-1/4	1F2-A2	1D1-B2	ST-1/4
3509278	ST-1/4	1F2-A1	1D2-D1	ST-1/4
3509278	ST-1/4	1F2-B1	1D2-C1	ST-1/4
3509278	ST-1/4	1F2-A2	1D2-B2	ST-1/4
3509278	ST-1/4	1F2-C2	1F2-B2	ST-1/4
3509278	ST-1/4	1B1-A1	1B1-D1	ST-1/4
3509278	ST-1/4	1B1-B1	1B1-C1	ST-1/4
3509278	ST-1/4	1B1-C2	1B1-D2	ST-1/4
3509278	ST-1/4	1B1-A2	1B1-B2	ST-1/4
3509278	ST-1/4	1B2-A2	1B1-B2	ST-1/4
3509278	ST-1/4	1B2-A1	1B2-D1	ST-1/4
3509278	ST-1/4	1B2-B1	1B2-C1	ST-1/4
3509278	ST-1/4	1B2-C2	1B2-D2	ST-1/4
3509278	ST-1/4	1B2-A2	1B2-B2	ST-1/4

TABLE A-3. JUMPER CHART GODDARD (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	ST-1/4	1D3-A2	1D3-D2	ST-1/4
3509278	ST-1/4	1D3-B2	1D3-C2	ST-1/4
3509278	ST-1/4	1D3-A1	1D3-B1	ST-1/4
3509278	ST-1/4	1D3-A1	1D1E-NC	ST-3/8
3509278	ST-1/4	1B2-D2	1S1-B1	3503803
3509278	ST-1/4	1F2-D2	1S1-B3	3503803
3033542		5A10-D1	5B11-D1	
3033542		5A10-D3	5B11-D3	
3033540		5A1-D2	5A1-D4	
3033540		5A2-D2	5A2-D4	
3033540		5A3-D2	5A3-D4	
3033540		5A4-D2	5A4-D4	
3033540		5A5-D2	5A5-D4	
3033540		5A6-D2	5A6-D4	
3033540		5A7-D2	5A7-D4	
3033540		5A8-D2	5A8-D4	
3033540		5A9-D2	5A9-D4	
3033540		5A10-D2	5A10-D4	
3033540		5A12-D2	5A12-D4	
3033540		5B1-D2	5B1-D4	
3033540		5B2-D2	5B2-D4	
3033540		5B3-D2	5B3-D4	
3033540		5B4-D2	5B4-D4	
3033540		5B5-D2	5B5-D4	
3033540		5B6-D2	5B6-D4	
3033540		5B7-D2	5B7-D4	
3033540		5B8-D2	5B8-D4	
3033540		5B9-D2	5B9-D4	
3033540		5B10-D2	5B10-D4	
3033540		5B11-D2	5B11-D4	
3033540		5B12-D2	5B12-D4	
3033540		5A12-D1	5A12-B2	
3033540		5A12-D3	5A12-A1	
3033540		5B12-D1	5B12-B2	
3033540		5B12-D3	5B12-A1	
3033540		5B9-D1	5B10-D1	
3033540		5B9-D3	5B10-D3	
3033540		5B10-D1	5B11-D1	
3033540		5B10-D3	5B11-D3	
3033540		5A9-D1	5A10-D1	

TABLE A-3. JUMPER CHART, GODDARD (cont'd)

Wire Part. No.	From		To	
	Terminal	Location	Location	Terminal
3033540		5A9-D3	5A10-D3	
3509277	ST-1/4	1D3-C1	1D3-D1	ST-1/4
3509277	ST-1/4	1D3-D1	1D2E-C	ST-3/8
3509277	ST-1/4	1D3-C1	1S2-B2	3503803
3033818		5A1-C1	5A1-C2	
3033818		5A1-A3	5A1-C2	
3033818		5A1-A3	5A1-A4	
3033818		5A2-A1	5A1-A4	
3033818		5A2-A1	5A2-A2	
3033818		5A3-A1	5A2-A2	
3033818		5A3-A1	5A3-A2	
3033818		5A4-A1	5A3-A2	
3033819		5A4-A1	5A4-A2	
3033818		5A5-A1	5A4-A2	
3033818		5A5-A1	5A5-A2	
3033818		5A6-A1	5A5-A2	
3033818		5A6-A1	5A5-A2	
3033818		5A7-A1	5A6-A2	
3033818		5A7-A1	5A7-A2	
3033818		5A8-A1	5A7-A2	
3033818		5A8-A1	5A8-A2	
3033818		5A9-A1	5A8-A2	
3033818		5A9-A1	5A9-A2	
3033818		5A9-A3	5A9-A2	
3033818		5A9-A3	5A9-A4	
3033818		5A10-A1	5A9-A4	
3033818		5A10-A1	5A10-A2	
3033818		5A10-A3	5A10-A2	
3033818		5A10-A3	5A10-A4	
3033818		5B1-A1	5B1-A2	
3033818		5B1-C3	5B1-A2	
3033818		5B1-C3	5B1-C4	
3033818		5B2-A1	5B1-C4	
3033818		5B2-A1	5B2-A2	
3033818		5B3-A1	5B2-A2	
3033818		5B3-A1	5B3-A2	
3033818		5B4-A1	5B3-A2	
3033818		5B4-A1	5B4-A2	
3033818		5B5-A1	5B4-A2	
3033818		5B5-A1	5B5-A2	

TABLE A-3. JUMPER CHART, GODDARD (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3033818		5B6-A1	5B5-A2	
3033818		5B6-A1	5B6-A2	
3033818		5B7-A1	5B6-A2	
3033818		5B7-A1	5B7-A2	
3033818		5B8-A1	5B7-A2	
3033818		5B8-A1	5B8-A2	
3033818		5B9-A1	5B8-A2	
3033818		5B9-A1	5B9-A2	
3033818		5B9-A3	5B9-A2	
3033818		5B9-A3	5B9-A4	
3033818		5B10-A1	5B9-A4	
3033818		5B10-A1	5B10-A2	
3033818		5B10-A3	5B10-A2	
3033818		5B10-A3	5B10-A4	
3033818		5B11-A1	5B10-A4	
3033818		5B11-A1	5B11-A2	
3033818		5B11-A3	5B11-A2	
3033818		5B11-A3	5B11-A4	
3212261	3002762	5A1-D1	5A1-D3	3002762
3212261	3002762	5A2-D1	5A2-D3	3002762
3212261	3002762	5A3-D1	5A3-D3	3002762
3212261	3002762	5A4-D1	5A4-D3	3002762
3212261	3002762	5A5-D1	5A5-D3	3002762
3212261	3002762	5A6-D1	5A6-D3	3002762
3212261	3002762	5A7-D1	5A7-D3	3002762
3212261	3002762	5A8-D1	5A8-D3	3002762
3212261	3002762	5A9-D1	5A9-D3	3002762
3212261	3002762			3002762
3212261	3002762	5A12-D1	5A12-D3	3002762
3212261	3002762	5B1-D1	5B1-D3	3002762
3212261	3002762	5B2-D1	5B2-D3	3002762
3212261	3002762	5B3-D1	5B3-D3	3002762
3212261	3002762	5B4-D1	5B4-D3	3002762
3212261	3002762	5B5-D1	5B5-D3	3002762
3212261	3002762	5B6-D1	5B6-D3	3002762
3212261	3002762	5B7-D1	5B7-D3	3002762
3212261	3002762	5B8-D1	5B8-D3	3002762

TABLE A-3. JUMPER CHART, GODDARD (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3212261	3002762	5B12-D1	5B12-D3	3002762
3212261	ST-3/8	5A13-2	5A13-3	ST-3/8
3212261	ST-3/8	5B14-2	5B14-3	ST-3/8
3213679	ST-3/8	5A13-5	5A13-11	ST-3/8
3002603	3061001	6C1-(-)	6C1-(+)	3061001
3033540		5TB1-J13	5TB1-H12	
3003731		5TB1-H1	5TB1-G2	
3003731		5TB1-H2	5TB1-G3	
3003731		5TB1-H3	5TB1-G4	
3003731		5TB1-H4	5TB1-G5	
3003731		5TB1-H5	5TB1-G6	
3003731		5TB1-H6	5TB1-G7	
3003731		5TB1-H7	5TB1-G8	
3003731		5TB1-H8	5TB1-G9	
3003731		5TB1-H9	5TB1-G10	
3003731		5TB1-H10	5TB1-G11	
3003731		5TB1-H11	5TB1-G12	
		1E1-B2	1E2-A2	
		1A1-B2	1A2-A2	
		1D1E	1D32	

APPENDIX B

WIRING CHARTS, BERMUDA

This appendix contains the following wiring charts:

Table B-1 External Cabling, Bermuda

Table B-2 Internal Cabling, Bermuda

Table B-3 Jumper Chart, Bermuda

TABLE B-1. EXTERNAL CABLING, BERMUDA

Function	Type Wire	From		To	
		Cannon AN22-14 IBM 709 RTC 7281 I/O Panel		Output Status Console	
		Conn	Term	Conn	Term
Sense Output 1	S* SIG	23	A	6TB1	a
	S RTN	23	B	6TB1	j
Sense Output 2	S SIG	23	C	6TB1	b
	S RTN	23	D	6TB1	j
Sense Output 3	S SIG	23	E	6TB1	c
	S RTN	23	F	6TB1	j
Sense Output 4	S SIG	23	G	6TB1	d
	S RTN	23	H	6TB1	j
Sense Output 5	S SIG	23	J	6TB1	e
	S RTN	23	K	6TB1	j
Sense Output 6	S SIG	23	L	6TB1	f
	S RTN	23	M	6TB1	j
Sense Output 7	S SIG	23	N	6TB1	g
	S RTN	23	P	6TB1	j
Sense Output 8 (Alarm)	S SIG	23	R	6TB1	h
	S RTN	23	S	6TB1	j
Power	#14 Hot	115vac		6TB3	F
	#14 Neutral	Power		6TB3	E
Equip Bond	#14 GND	Source		6TB3	D

*S - Signal

TABLE B-2. INTERNAL CABLING, BERMUDA

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3002550	3061018	6TB3-F	6F1-A	ST-3/8
3002550	ST-3/8	6F1-B	6S1-NO	3503803
3002550	3503803	6S1-C	5B13-5	ST-3/8
3002550	ST-3/8	1C3E-C	5B13-5	ST-3/8
3002550	ST-3/8	1C3E-NO	5B13-16	ST-3/8
3002550	3061018	6TB3-C	5B13-16	ST-3/8
3002550	ST-3/8	5B14-5	6TB3-B	3061018
3002550	3503803	6X1-B	6TB3-A	3061018
3002550	3503803	6X1-A	5B14-12	ST-3/8
3002550	3061001	6TB3-B	6DS1-YEL	ST-3/8
3002550	3061001	6TB3-A	6DS1-YEL	ST-3/8
3002542	3061001	6C1-(-)	5B13-15	ST-3/8
3002542	3061001	6C1-(-)	6DS1-BLK	ST-3/8
3002542	3061001	6C1-(-)	6TB1-K	3501481
3002560	3061001	6C1-(+)	6DS1-RED	ST-3/8
3002560	3061001	6C1-(+)	6F2-A	ST-3/8
3002560	ST-3/8	1C1E-C	6F2-B	ST-3/8
3002560	3002762	5TB1-J1	6F2-B	ST-3/8
3509277	ST-3/8	5B13-15	1C3-A1	ST-1/4
3509277	3501481	6TB1-B	5B1-D3	3002762
3509277	3501481	6TB1-C	5B2-D3	3002762
3509277	3501481	6TB1-D	5B3-D3	3002762
3509277	3501481	6TB1-E	5B4-D3	3002762
3509277	3501481	6TB1-F	5B5-D3	3002762
3509277	3501481	6TB1-G	5B6-D3	3002762
3509277	3501481	6TB1-H	5B7-D3	3002762
3509277	3501481	6TB1-J	5B8-D3	3002762
3509277	3501481	6TB1-B	5B11-C1	3002762
3509277	3501481	6TB1-C	5B11-C2	3002762
3509277	3501481	6TB1-D	5B11-C3	3002762
3509277	3501481	6TB1-E	5B11-C4	3002762
3509277	3501481	6TB1-F	5B12-C1	3002762
3509277	3501481	6TB1-G	5B12-C2	3002762
3509277	3501481	6TB1-H	5B12-C3	3002762
3509277	3501481	6TB1-J	5B12-C4	3002762
3509277	3501481	6TB1-K	5B11-A1	3002762
3509277	3501481	6TB1-K	5B11-D3	3002762
3509277	ST-3/8	5B14-2	5B8-A4	3002762
3509277	ST-3/8	1A1E-C	5B9-A1	3002762
3509277	ST-3/8	1A1E-NO	5B9-C1	3002762

TABLE B-3. JUMPER CHART, BERMUDA

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	ST-1/4	1B7-A2	1B7-B2	ST-1/4
3509278	ST-1/4	1B7-A1	1B7-D1	ST-1/4
3509278	ST-1/4	1B7-B1	1B7-C1	ST-1/4
3509278	ST-1/4	1B7-B2	1B6-B2	ST-1/4
3509278	ST-1/4	1B6-B2	1B6-A2	ST-1/4
3509278	ST-1/4	1B6-A1	1B6-D1	ST-1/4
3509278	ST-1/4	1B6-B1	1B6-C1	ST-1/4
3509278	ST-1/4	1B6-A2	1B5-A2	ST-1/4
3509278	ST-1/4	1B5-B2	1B5-A2	ST-1/4
3509278	ST-1/4	1B5-B1	1B5-C1	ST-1/4
3509278	ST-1/4	1B5-A1	1B5-D1	ST-1/4
3509278	ST-1/4	1B5-B2	1B4-B2	ST-1/4
3509278	ST-1/4	1B4-B1	1B4-C1	ST-1/4
3509278	ST-1/4	1B4-A1	1B4-D1	ST-1/4
3509278	ST-1/4	1B4-B2	1B4-A2	ST-1/4
3509278	ST-1/4	1B3-A2	1B4-A2	ST-1/4
3509278	ST-1/4	1B3-A1	1B3-D1	ST-1/4
3509278	ST-1/4	1B3-B1	1B3-C1	ST-1/4
3509278	ST-1/4	1B3-A2	1B3-B2	ST-1/4
3509278	ST-1/4	1B2-B2	1B3-B2	ST-1/4
3509278	ST-1/4	1B2-B1	1B2-C1	ST-1/4
3509278	ST-1/4	1B2-A1	1B2-D1	ST-1/4
3509278	ST-1/4	1B2-B2	1B2-A2	ST-1/4
3509278	ST-1/4	1B1-A2	1B2-A2	ST-1/4
3509278	ST-1/4	1B1-A1	1B1-D1	ST-1/4
3509278	ST-1/4	1B1-B1	1B1-C1	ST-1/4
3509278	ST-1/4	1B1-A2	1B1-B2	ST-1/4
3509278	ST-1/4	1A1-A2	1A1-B2	ST-1/4
3509278	ST-1/4	1A1-A1	1A1-D1	ST-1/4
3509278	ST-1/4	1A1-B1	1A1-C1	ST-1/4
3509278	ST-1/4	1C3-A1	1C3-D1	ST-1/4
3509278	ST-1/4	1C3-A2	1C3-B2	ST-1/4
3509278	ST-1/4	1C3-C2	1C3-D2	ST-1/4
3509278	ST-1/4	1C3-B1	1C3-C1	ST-1/4
3033540	ST-1/4	5B9-D1	5B9-B2	ST-1/4

TABLE B-3. JUMPER CHART, BERMUDA

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3509278	ST-1/4	1B7-A2	1B7-B2	ST-1/4
3509278	ST-1/4	1B7-A1	1B7-D1	ST-1/4
3509278	ST-1/4	1B7-B1	1B7-C1	ST-1/4
3509278	ST-1/4	1B7-B2	1B6-B2	ST-1/4
3509278	ST-1/4	1B6-B2	1B6-A2	ST-1/4
3509278	ST-1/4	1B6-A1	1B6-D1	ST-1/4
3509278	ST-1/4	1B6-B1	1B6-C1	ST-1/4
3509278	ST-1/4	1B6-A2	1B5-A2	ST-1/4
3509278	ST-1/4	1B5-B2	1B5-A2	ST-1/4
3509278	ST-1/4	1B5-B1	1B5-C1	ST-1/4
3509278	ST-1/4	1B5-A1	1B5-D1	ST-1/4
3509278	ST-1/4	1B5-B2	1B4-B2	ST-1/4
3509278	ST-1/4	1B4-B1	1B4-C1	ST-1/4
3509278	ST-1/4	1B4-A1	1B4-D1	ST-1/4
3509278	ST-1/4	1B4-B2	1B4-A2	ST-1/4
3509278	ST-1/4	1B3-A2	1B4-A2	ST-1/4
3509278	ST-1/4	1B3-A1	1B3-D1	ST-1/4
3509278	ST-1/4	1B3-B1	1B3-C1	ST-1/4
3509278	ST-1/4	1B3-A2	1B3-B2	ST-1/4
3509278	ST-1/4	1B2-B2	1B3-B2	ST-1/4
3509278	ST-1/4	1B2-B1	1B2-C1	ST-1/4
3509278	ST-1/4	1B2-A1	1B2-D1	ST-1/4
3509278	ST-1/4	1B2-B2	1B2-A2	ST-1/4
3509278	ST-1/4	1B1-A2	1B2-A2	ST-1/4
3509278	ST-1/4	1B1-A1	1B1-D1	ST-1/4
3509278	ST-1/4	1B1-B1	1B1-C1	ST-1/4
3509278	ST-1/4	1B1-A2	1B1-B2	ST-1/4
3509278	ST-1/4	1A1-A2	1A1-B2	ST-1/4
3509278	ST-1/4	1A1-A1	1A1-D1	ST-1/4
3509278	ST-1/4	1A1-B1	1A1-C1	ST-1/4
3509278	ST-1/4	1C3-A1	1C3-D1	ST-1/4
3509278	ST-1/4	1C3-A2	1C3-B2	ST-1/4
3509278	ST-1/4	1C3-C2	1C3-D2	ST-1/4
3509278	ST-1/4	1C3-B1	1C3-C1	ST-1/4
3033540	ST-1/4	5B9-D1	5B9-B2	ST-1/4

TABLE B-3. JUMPER CHART, BERMUDA (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3033540		5B11-D1	5B12-D1	
3033540		5B1-D2	5B1-D4	
3033540		5B2-D2	5B2-D4	
3033540		5B3-D2	5B3-D4	
3033540		5B4-D2	5B4-D4	
3033540		5B5-D2	5B5-D4	
3033540		5B6-D2	5B6-D4	
3033540		5B7-D2	5B7-D4	
3033540		5B8-D2	5B8-D4	
3033540		5B9-D2	5B9-D4	
3033540		5B11-D2	5B11-D4	
3033540		5B12-D2	5B12-D4	
3033818		5B1-A1	5B1-A2	
3033818		5B1-A2	5B2-A1	
3033818		5B2-A2	5B2-A1	
3033818		5B2-A2	5B3-A1	
3033818		5B3-A2	5B3-A1	
3033818		5L3-A2	5B4-A1	
3033818		5B4-A2	5B4-A1	
3033818		5B4-A2	5B5-A1	
3033818		5B5-A2	5B5-A1	
3033818		5B5-A2	5B6-A1	
3033818		5B6-A2	5B6-A1	
3033818		5B6-A2	5B7-A1	
3033818		5B7-A2	5B7-A1	
3033818		5B7-A2	5B8-A1	
3033818		5B8-A2	5B8-A1	
3033818		5B7-A2	5B8-C3	
3033818		5B8-C4	5B8-C3	
3033818		5B8-A3	5B9-C1	
3033818		5B9-A1	5B9-D3	
3033818		5B11-D3	5B12-D3	
3033818		5B11-A1	5B11-A2	
3033818		5B11-A3	5B11-A2	
3033818		5B11-A3	5B11-A4	

TABLE B-3. JUMPER CHART, BERMUDA (cont'd)

Wire Part No.	From		To	
	Terminal	Location	Location	Terminal
3033818		5B11-A4	5B12-A1	
3033818		5B12-A2	5B12-A1	
3033818		5B12-A2	5B12-A3	
3033818		5B12-A4	5B12-A3	
3002603	3061001	6C1-(-)	6C1-(+)	3061001
3212261	3002762	5B1-D1	5B1-D3	3002762
3212261	3002762	5B2-D1	5B2-D3	3002762
3212261	3002762	5B3-D1	5B3-D3	3002762
3212261	3002762	5B4-D1	5B4-D3	3002762
3212261	3002762	5B5-D1	5B5-D3	3002762
3212261	3002762	5B6-D1	5B6-D3	3002762
3212261	3002762	5B7-D1	5B7-D3	3002762
3212261	3002762	5B8-D1	5B8-D3	3002762
3212261	3002762	5B9-D1	5B9-D3 <	3002762
3212261	3002762	5B12-D1	5B12-D3	3002762
3212261	ST-3/8	5B14-3	5B14-2	ST-3/8